TRANSIT: MEXICO'S METRO PAYS ITS WAY

May 10, 1971

RAILWAY AGE

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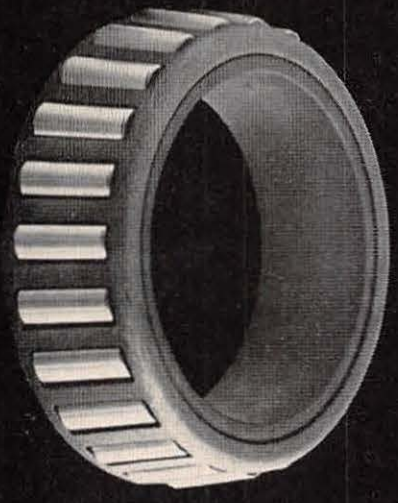

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Inside

LUTHER MILLER

FOR THE 100th TIME

Eight years and three months ago Railway Age published its first transit issue. The date was Feb. 18, 1963. The current issue is the 100th devoted, in large part, to defending the proposition that the best way yet devised by man to move people from Point A to Point B is the steel wheel on the steel rail. To mark the occasion we are putting the product in a slightly different package labeled "Moving People"—a term broad enough to embrace not only urban transport but also the coming renaissance in the intercity movement of people by rail.

WHAT A DIFFERENCE EIGHT YEARS MAKES

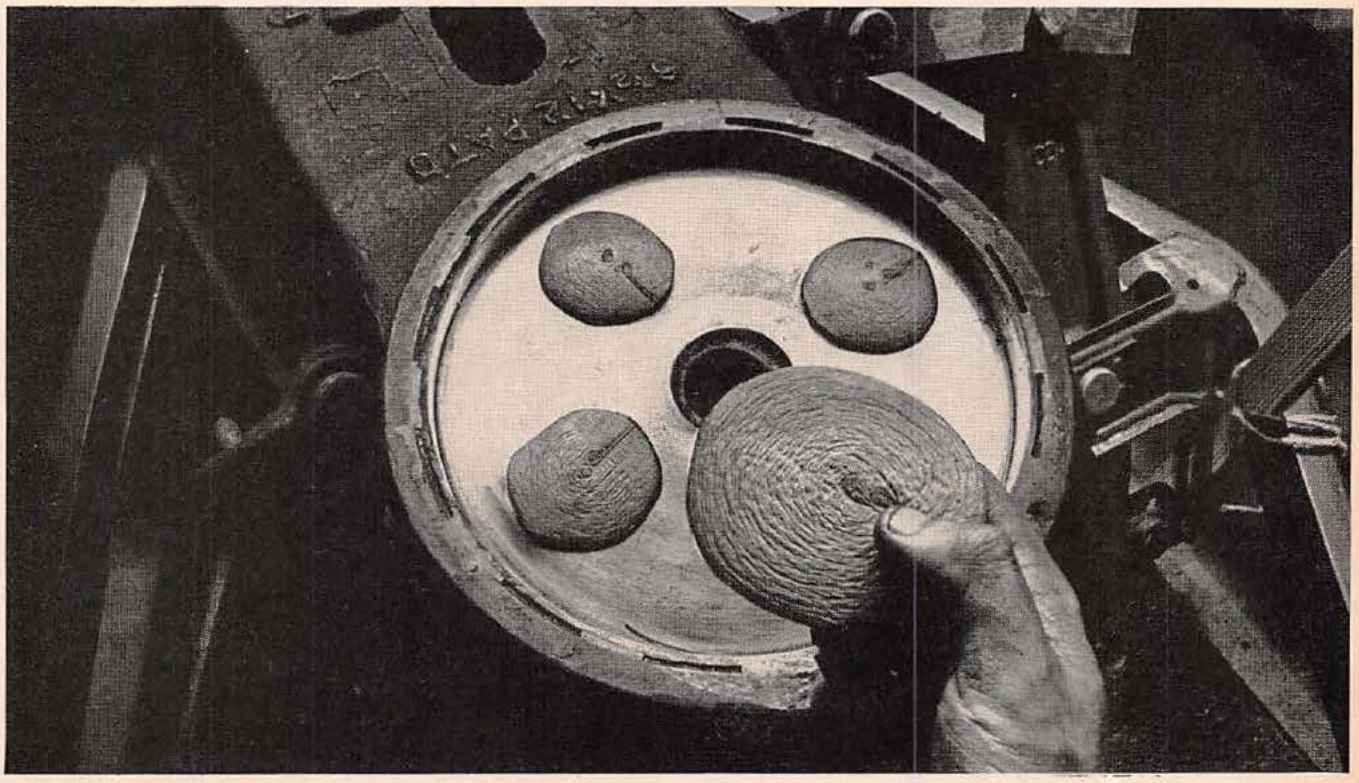
Eight years and three months ago, the Bay Area had just turned the first spadeful of earth for a transit system price-tagged at $792 million. The Atlanta Study Transit Commission had recommended construction of a $282-million system. Washington, D. C., planners were eyeing a $793-million system. Cleveland Transit was studying a Hopkins Airport extension that, the faint-hearted warned, air-minded people would never patronize in great numbers. A Philadelphia-Kirkwood (N. J.) high-speed line was still a planner's dream. Down in Mexico City, a group of visionaries worked against staggering odds for a mass-transit solution to that city's tangled traffic problems. And back at home, transit advocates were grumbling over the Federal government's failure to invest more than a few million dollars a year in transit.

Today, the BART system is ready to go into dress rehearsal for a January 1972 opening (the pricetag having soared to $1.2 billion). Atlanta is still studying (and the cost of its proposed system has risen to $1 billion). The D. C. Metro is at last in the digging stage (the cost now estimated at better than $2.5 billion).

The Cleveland Airport Extension and the Lindenwold (Philadelphia-Kirkwood) Line are moving people at a furious pace, and the doubters have slunk out of sight. Mexico City has raced ahead of just about everybody: its Metro is now transporting nearly 1 million people a day, while most of its richer neighbors to the north are still in the talk-study-and-fuss phase. And here at home, people are still complaining about underfunding from Washington. But the complaint now is that *only* $400 million will be poured into transit this year—an indication of how far we have come in less than a decade.

In this 100th transit issue, we revisit BART (p. 24), and offer a progress report on Mexico City (p. 27) which is preparing to host the annual convention of the Institute for Rapid Transit in June. Both stories were prepared by Associate Editor Fred Houser after visits in recent weeks to Mexico and California.

They may look like pancakes, but the Soo Line serves four on every centerplate.



What do the Soo Line people think about Shell's Centerplate Lubricant discs after trying them on all types of cars for more than a year?

Soo carmen liked them, because they are much cleaner and easier to use than a grease gun. Their foreman liked the discs, because lubrication now gets done so much faster. And the Soo's Chief Mechanical Officer, T. F. "Tom" Kearney, liked them because, "I can now be certain that the men are using them. It's much easier to ask a man to do a clean job than make him do a dirty job."

All of these advantages—on top of the excellent lubrication job the discs have done—have made Shell Centerplate Lubricant discs a stock item for the Soo Line.

How they work.

Four of these one-ounce discs (which Soo carmen call "buckwheats") are placed in each centerplate. Each disc contains a measured amount of molybdenum disulfide within a wax-polymer binder. The centerplate gets a controlled, correct lubrication, with no slopover or squeezeout.

These discs meet all requirements of AAR Interchange Code of Rules, Rule 61D3, as revised in Supplement No. 1, effective August 1, 1969. A six-pound package, about the same size and weight as a six-pack beverage carton, contains enough discs to lubricate 24 centerplates. If you haven't tried Shell's "railroad pancakes" on your centerplates yet, contact your Shell Railroad Representative. For a detailed brochure, write Shell Oil Co., Dept. RO/W, P.O. Box 1890, Trenton, N.J. 08607.

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Circle 4 on coupon page 39

RAILWAY AGE

May 10, 1971

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COVER

The four-color photograph was taken at Hayward, Cal., and shows one of the Bay Area Rapid Transit District's prototype cars which has been undergoing appraisal by BART engineers on a section of line which is now completed. BART photographer was Gordon Kloess.

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Short and Significant

TRANSIT

BOEING GETS SURFACE VEHICLE ORDER

Boeing, long noted for its commercial aircraft, has been selected to build the vehicles for a Personal Rapid Transit (PRT) System that will be installed on the campus of the University of West Virginia in Morgantown. "This contract is of great significance in our efforts to make a major contribution to the surface transportation field," says Carl Weiland, head of Boeing's Surface Transportation Systems Department. Boeing is teaming with Alden Self-Transit Systems Corp., developer of the StaRRcar concept. An UMTA grant will finance the computer-operated demonstration project which involves small rubber-tired vehicles tranversing a guideway network.

LIM VEHICLE DUE FOR TEST

Transportation Secretary John A. Volpe is scheduled to witness the first run of a LIM-propelled vehicle at the Department of Transportation's new test center near Pueblo, Col., on May 19. The AiResearch vehicle with its linear induction motor was built as part of DOT's effort to develop a ground transportation system capable of very high speeds.

LINDENWOLD EXTENSIONS AUTHORIZED

The New Jersey Legislature has authorized the Lindenwold transit line (RA, Feb. 8, p. 17) to be extended to other New Jersey points, including Atlantic City. Initial extensions would probably be to Woodbury and Mount Holly, serving the Philadelphia and Camden suburban areas. A DOT grant of $1.5 million has been made to permit establishment of a Dial-A-Ride minibus service to serve Lindenwold's present station at Haddonfield, N.J. UMTA and New Jersey DOT will jointly develop the personalized door-to-door service.

FINANCIAL

AUTO-TRAIN TO ISSUE NOTES AND STOCK

Auto-Train Corp. of Florida, authorized by the ICC to operate a rail passenger and automobile transport service between Alexandria, Va., and Sanford, Fla., also has been authorized by the Commission to issue $2 million of promissory notes and 5-year warrants to purchase 300,000 shares of common stock. Five hundred thousand common shares will be offered to the public. The Commission conditioned its grant of authority upon applicant making a full disclosure to the investing public of the risks involved. Auto-Train will transport automobiles and their passengers over the Richmond, Fredericksburg & Potomac and Seaboard Coast Line.

DOT TURNS DOWN B&M LOAN-GUARANTEE

DOT has turned thumbs down on a request by the Boston & Maine for a $12-million government loan guarantee. However, FRA Deputy Administrator Carl V. Lyon left the door open for a renewed loan application. In a letter to B&M's counsel, Lyon said data submitted in support of the loan application showed B&M to have a sufficient cash flow for four months. Presentation of new data could cause DOT to reconsider, he indicated.

THE INDUSTRY

PC TO CONTINUE BEECH GROVE CAR REPAIRS

Penn Central will not curtail the freight-car-repair program at its Beech Grove, Ind., shops, as previously announced. The former action had been taken to achieve needed economies in the road's struggle to reorganize successfully. William H. Moore, PC president, said the railroad reconsidered its earlier move after discussions with various public officials, including Sen. Vance Hartke (D.-Ind.). PC will rearrange its forces and work programs in the Indianapolis area to eliminate about 150 jobs, affecting only recently hired employees.

ROMNEY ASKS NEW RATES ON HOUSING UNITS

HUD Secretary George Romney has met with 17 rail traffic executives to discuss transport of modular housing units. The units, connected to form townhouses, are vital to HUD's "Operation Breakthrough," its effort to mass produce low-cost housing on a nationwide scale (RA, July 27, 1970, p. 18). Romney told the rail men that cost of shipment by rail and lack of equipment was barring progress on the scheme. Urging them to come up with an economically feasible solution, he said unit manufacturers cannot now tap markets.

RAILWAY AGE
NEWS

Watkins paints a bright picture for C&O/B&O stockholders

With the annual-meeting season in full swing, railroad shareholders are beginning to get a clearer picture of what 1971 may hold—and in few places does that picture look brighter than at Chesapeake & Ohio/Baltimore & Ohio.

Hays T. Watkins, Jr., president and chief executive officer, was the bearer of the glad tidings at C&O's meeting. And he made these points:

—Total capital expenditures in 1971 will be $151.6 million, an increase of $29 million from last year's spending total.

—Earnings this year should show an improvement, assuming the economy can stay free of work stoppages in coal, steel and railroading. As previously reported (RA, April 12, p. 8), C&O/B&O first-quarter net income was up sharply, and improvement is also expected in the second quarter.

—Traffic and revenue projections continue to look good. First-quarter industrial expansions online will bring in new revenues estimated at about $8.6 million within a year.

—Online coal business continues to show growth, with 20 new mines opened last year and eight more under development. For 1971, C&O/B&O estimates total coal traffic at 120 million tons, including 18 million tons for export.

—C&O/B&O's car fleet is also growing. The roads put 3,320 coal-carrying cars into service last year, and company shops are scheduled to deliver 4,420 100-ton open-top hopper cars by July 1. In all, C&O/B&O will spend $91.2 million for freight cars in the 1971 program (plus $36.3 million for 142 diesel-electric units, and upwards of $20 million for track and roadway improvement, signal and communications systems and other fixed-plant improvements).

Watkins also dealt at length with two other prime-interest subjects: Amtrak, and the abandonment of the C&O/Norfolk & Western merger plan.

On Amtrak, the mathematics look favorable—both short-and long-run. C&O/B&O's entry fee was $9.5 million payable over three years. And, said Watkins, "a very rough guess is that labor protection costs will approach $5 million, most of it to be paid this year and next." At the same time, C&O/B&O sustained a loss of $13.9 million (avoidable-cost basis) on intercity passenger operations last year, and the 1971 loss was being pegged at about $17 million.

After considering tax effects and the payments to Amtrak and affected rail employees, the deficit load this year "will not be significantly lightened. For the future, of course, the removal of the burden is of great significance."

As for the termination of C&O/N&W merger planning, Watkins said, "In simple terms, the engagement went on so long, waiting for official blessing, that conditions changed radically and marriage became impossible."

Among the conditions noted: (1) The bankruptcy of Penn Central, which "ended the threat of that giant system dominating the East;" (2) changed circumstances involving five smaller roads which might have become part of the merged system; (3) changed conditions in the stock market, which affected the agreed-upon exchange ratio; and (4) reopening of the case by the ICC, which made it "painfully clear that a decision was to be indefinitely postponed."

Watkins summed it all up this way:

"Had circumstances permitted the merger, I believe it would have been successful. N&W and C&O have similar backgrounds and their officer groups, while keen business rivals on occasion, have admired each other's ability to run a railroad profitably. Learning from the careful pace of the C&O affiliation with B&O, we were prepared to coordinate N&W/B&O without disrupting service.

"Happily, while the collapse of the N&W merger may have left both parties waiting at the church, it by no means finds C&O/B&O left in a lurch. Our position is secure and our prospects are excellent."

Wisconsin crew-law repealer introduced

As expected, Wisconsin railroads are moving ahead with a repeal drive aimed at the state's 1907-vintage train-crew law (RA, April 12, p. 12). A bill is now before the state Senate.

Meanwhile, the railroads are stressing a point that has proved troublesome in repeal efforts in other states—namely, that repeal would not cause any employee working at the time of repeal to lose his job or suffer a reduction in earnings. It is estimated that application of the law saddles the carriers with extra costs in excess of $10 million a year. And if the law is not repealed, the roads say they may have to take other steps to offset these costs.

"It's no secret," said a state association spokesman, "that railroads which serve the state's industry are giving serious consideration to attempting to recover these additional costs incurred in Wisconsin. So long as they incur extraordinary and unnecessary costs while providing services to Wisconsin customers, they feel there is adequate justification in passing these added costs along to their customers."

L&N plans major shop upgrading

Louisville & Nashville is following up on its plans to install spot-repair facilities for locomotive units (RA, Dec. 28, 1970, p. 43) with announcement of a $1.9-million program at South Louisville company shops. Four major work stations will be set up—including one for units failed-in-service or needing heavy repairs, and one for classified repairs, which L&N describes as a new program of preventive maintenance. In addition, L&N will install a new process for parts-cleaning. And it will equip the shop with a soundproof load-testing cell in which units may be tested at speed. This installation, L&N says, will be "designed to satisfy environmental standards for noise control."

THINKING ACI SAVINGS?

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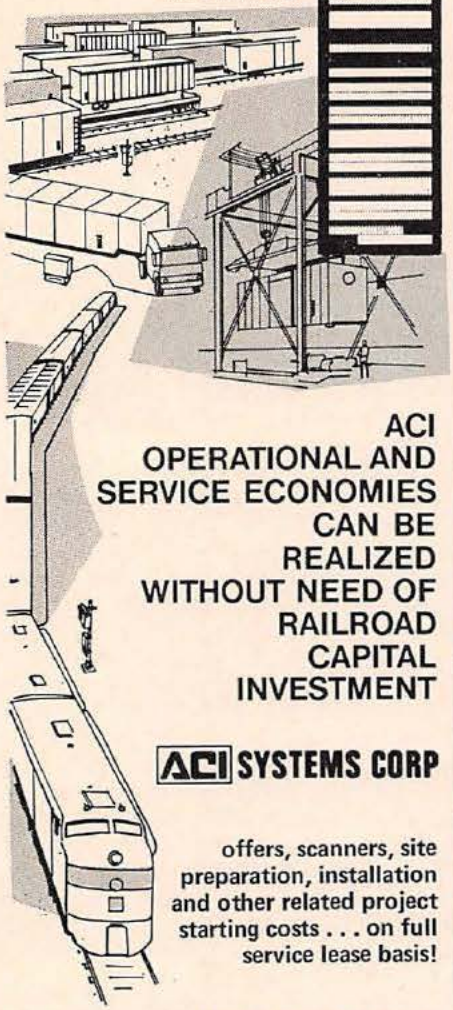

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Circle 7 on coupon page 35

Southern has record single-quarter net

Net consolidated income of the Southern Railway System in the first quarter of 1971 was 47.7% above that of the 1970 period and was the highest for any quarter in the railroad's history. W. Graham Claytor, Jr., Southern president has reported that net income, after taxes, in this year's first three months totaled $18.-233 million on total operating revenues of $164.783 million, also a record for any quarter, compared with net income of $12.342 million and total revenues of $143.074 million in the 1970 first quarter.

Currently, Southern is sticking with the capital budget it announced at the beginning of 1971. There are economic uncertainties and a "ticklish railway labor situation" in the outlook. However, in addition to higher rates, Southern freight traffic is benefitting from a "better mix" in 1971—involving longer hauls and heavier per-car loadings, along with a greater proportion of higher-rated commodities.

Claytor reported record piggyback volume and revenues for 1971's first quarter (up 11.4% to $8.6 million) and said Southern is working to increase TOFC/COFC traffic. While steel shipments will continue heavy through the first half as stockpiles are expanded in anticipation of a steel strike, this traffic will inevitably be lower in the final six months whether or not the mills' production is interrupted.

Southern's heavy buying of cars and locomotives in recent years is now paying off in terms of reduced equipment maintenance expenses, he said.

While affirming his confidence in "the ultimate success of Amtrak" passenger service, Claytor has spelled out Southern's reasons for not signing a contract, although it intends to serve as a cooperative, connecting carrier in the national network. Southern's subsidiary Central of Georgia did sign its Amtrak contract and ceased all passenger service on May 1.

Since Southern did not sign with Amtrak, it is committed not only to continue its Washington-New Orleans "Southern Crescent" until Dec. 31, 1974, but other passenger trains on the Washington-Atlanta and Salisbury-Asheville, N. C., lines. Southern, says Claytor, will not downgrade its remaining trains and is providing through diners between Washington and New Orleans and daily trains between Atlanta and Birmingham, neither of which would have been preserved under the contract Amtrak proposed.

Southern will continue to have substantial passenger losses and over 3½ years, explains Claytor, they may not be less than the $9.8 million (50% of its 1969 ICC passenger deficit) which would have been the price of signing with Amtrak. However, Southern is not now subjected to service requirements of an "unknown corporation and an unknown management."

Here are some other first-quarter net-income reports (the comparison in each case is with the first quarter of 1970):

Bangor & Aroostoock—Net income was $111,931, compared with a loss of $252,500.

Chicago & Eastern Illinois—Consolidated net income of $431,248, compared with a net loss of $209,596.

Gulf, Mobile & Ohio—Net earnings were $1,749,000, compared with $1,-932,000.

Louisville & Nashville—Net income was $4,052,872, compared with $3,-803,016.

Maine Central—Net income totaled $305,870, compared with $28,704.

Milwaukee Road—Net loss was $2,-375,674, compared with a deficit of $5,096,615.

Norfolk & Western—Net income was $21,100,000, compared with $14,-432,000. (Consolidated net income for the N&W system—including Dereco, Inc., and its wholly-owned subsidiaries, Erie Lackawanna and Delaware & Hudson, was $20,043,000.)

Norfolk Southern—Net income was $141,375, compared with $30,996.

Pittsburgh & Lake Erie—Net income totaled $2,600,968, compared with $1,921,786.

Reading—Deficit was $2,388,000, compared with a deficit of $3,913,000. (On a consolidated basis, which includes the Reading and 12 subsidiaries, the first-quarter loss was $2,373,-000, compared with a loss of $3,950,-000 for the 1970 period.)

Rock Island—Net loss was $5,496,-302, compared with a net loss of $3,-461,930.

St. Louis-San Francisco—Net income of $3,330,134 was the highest for a first quarter in the history of the company; it compared with net income of $3,112,993 in first-quarter 1970.

Santa Fe Industries—Consolidated net income totaled $12,559,000, compared with $13,261,000.

Seaboard Coast Line Industries—Consolidated net income was $9,779,-000, compared with $7,982,000.

Soo Line—Consolidated net income was $1,766,150, compared with $1,-109,641.

Southern Pacific—Consolidated net income was $18,461,000, compared with $18,390,000.

Western Pacific—Net loss totaled $822,000, compared with a net loss of $2,740,000.

"Pacific Zip" speeds the mail

"Pacific Zip," Burlington Northern's new crack daily mail train between Chicago and the Pacific Northwest, more than lived up to its name on its inaugural run, April 24 (RA, April 26, p. 14).

As a hint of what was about to unfold, the train—consisting of three SD-45s and 17 freight cars, including Flexi-Vans, piggyback and high-speed box cars— pulled out of Chicago eight minutes ahead of schedule. Picking up time all along the 2,181-mile route, Zip arrived in Seattle six hours ahead of its announced 50-hour schedule, and almost two hours faster than BN's "Empire Builder" has been covering the same route.

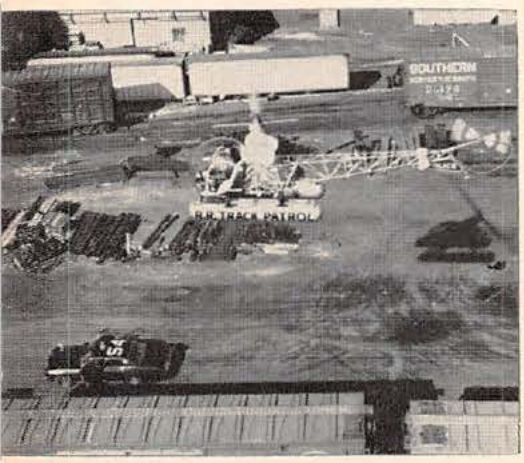
Third and Fourth Class mail, often given the ignominious title of "junk mail," is making up the bulk of Zip's cargo. About half originates in Chicago while the rest is coming in from the East Coast via Penn Central. The 50-hour schedule (which subsequent Zip trains have been beating with regularity) is getting the mail into the hands of Seattle residents a full day earlier than before, and the 9 a.m., second-morning arrival is helping save the U.S. Postal Service about $600,000 annually.

Morning arrival in Seattle, explains John C. Miller, director of the Postal Service's transportation economics and development division, provides two sources of savings:

—A 10% labor differential won't have to be paid night workers for processing the mail.

—Overhead costs will be lowered because premium utility time won't be used.

Prior to Zip, Third and Fourth Class mail reached the Pacific Northwest via both BN and the Milwaukee Road. Arrival time was over half-a-day behind Zip's, putting the mail in Seattle at night. More important to the Postal Service than the savings in labor and overhead, however, adds Miller, is the fact that the mail is getting through to patrons much faster. Zip blends in with the Postal Service's commitment "to reduce the cycle time" of all mail, not just First Class.



MTA launches 'copter patrol

New York's Metropolitan Transportation Authority has sent two helicopters aloft in an effort to curb vandalism on Long Island Railroad and Penn Central property. The Bell helicopters work in conjunction with railroad police cars on the ground. They are equipped with five-channel police radios and air-to-ground public address systems with sirens. The radio equipment permits each 'copter to respond to emergency situations on either railroad line. In four weeks it has been effective.

Javits proposes new loan agency

Senator Jacob K. Javits (R-N.Y.) has introduced S. 1641 which would authorize the Secretary of the Treasury to guarantee loans to business in "necessitous circumstances." The Secretary's authority would have a life of one year, after which he would be required to submit to Congress a report and recommendations for establishing a permanent Emergency Loan Guarantee Corporation. If not vetoed by Congress, the new corporation would thereupon succeed to the initial Treasury loan-guarantee program.

Maximum outstanding loans under the program could not exceed $5 billion. Treasury would have to justify to Congress any loan, or series of loans, exceeding $20 million in one year. Congress would have to approve.

The Javits' measure, similar to one he introduced last year, is regarded by observers as a good idea whose time has not come. The apparent upturn in the economy, they say, will reduce its already uncertain chance of passage. They add, however, that if Lockheed, other aerospace firms, Penn Central, and some airlines appear headed for further crises, the idea may receive renewed consideration.

Japan has $31-billion rail-building program

For rail partisans in Japan, April 1 was a red-letter day. It marked the beginning of the Japanese fiscal year 1971 —and the start of an ambitious, 15-year program that calls for construction of 5,590 miles of new "super-express" main lines at a cost of $31.4 billion.

When completed, the expanded rail network will link all major cities in Japan with 155-mph trains. The present 17-hour, 21-minute schedule between Tokyo and Sapporo in Hokkaido, for example, will be cut to 5 hours and 50 minutes.

The success of the New Tokaido Line between Tokyo and Osaka led to the decision to build a nation-wide high-speed network. NTL opened in October 1964 with 30 round trips daily. There are over 110 round trips daily.

First phase of the new project will see construction begin this year on three new lines. The New Tohoku Line will run 332 miles in the Tokyo-Morioka section of the 621-mile Tokyo-Sapporo Line. The New Joetsu Line, Tokyo to Niigata, will stretch 208 miles. The New Narita Line will run 50 miles from Tokyo to the site of a new international airport.

Precision Corp. will rebuild and lease locomotives, using IC shop

Precision National Corp., an Illinois firm which has previously dealt in rebuilt locomotives and overhauled components, has announced its entry into motive power leasing on a large scale. The expected volume of the new operation was evident last week when the first Precision unit, an ungraded GP 9, was rolled out of the Illinois Central shop at Paducah, Ky. The new Precision locomotive came off a rebuild line which has produced well over a hundred units for IC since 1967.

The power units are re-manufactured at Precision's facility at Mt. Vernon, Ill.

Precision (which recently changed its name from Precision Engineering Co. to Precision National Corp.) now expects to follow a course similar to that adopted by IC's mechanical department—taking units in the 15-year-old age bracket and restoring them for possibly another 15 years of economical operation. The source of Precision's potential rebuilds will be units sold outright by railroads or turned in on a rebuild-and-lease-back basis.

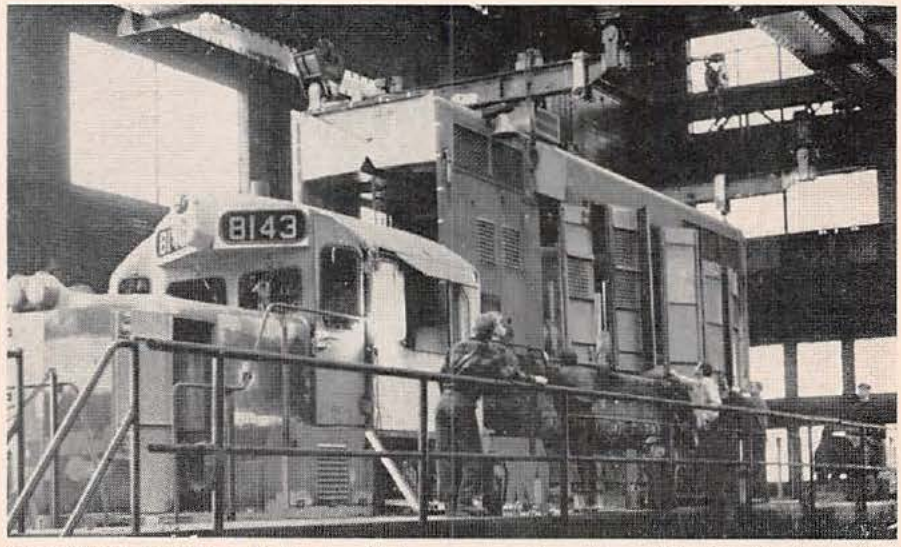
Rather than utilize its own facility at Mount Vernon for assembly, Precision officers decided to avail themselves of IC's capabilities at nearby Paducah, some 90 miles to the south.

Not only is the Paducah Shop rebuilding older units but it is also upgrading them by boosting their output another 100 horsepower. Units that have gone through the rebuild program thus far have been either GP-7s, GP-9s, E-9s or SW-7s. Among the 50 units scheduled this year for IC are some NW-2 yard locomotives, TR-2 "cow and calf" switchers, as well as more GP-9s and GP-7s.

As it has been gaining more and more experience in the field of rebuilding, the Paducah Shop has been doing more and more of its own component rebuilding, too. At the same time, it is chipping away steadily at the out-of-pocket cost of unit rebuilding. The average cost today is down 20% from that of the first units produced in 1967. With even greater efficiencies likely to materialize this year in the form of better scheduling and improved production methods, costs could tumble even more.

Because it was able to set up the Paducah Shop on an assembly line basis, IC has been able to keep its rebuilding costs to a minimum. However, as Senior Vice President Otto Zimmerman and B. D. Venable, chief mechanical officer, will quickly say, it is the skills of the work force at the Paducah Shop which really spell the difference.

"The rebuilt units we're turning out are really better than when they were new," says Venable. In a way, they really are. In the 15 or so years since they were built new, many improved components and systems have been developed for locomotives. IC is taking full advantage of them.



PRECISION UNITS at Paducah will be processed much as this Illinois Central GP locomotive which is having hood installed following rebuilding from underframe.

IC craftsmen at Paducah Shop are also re-styling the units as they rebuild them. Noses of the units are being cut down to the popular 41-in. height of modern-day locomotives to improve the engineman's field of vision. At the same time, headlights are being transferred from atop the cab to a position on the re-styled nose. Gyro safety lights are being installed in place of the headlights at the top front of the cabs.

Not only do the units look like new ones as they emerge from the Paducah Shop, but they are also performing as though they had just had the new wrapping taken off them. "We're experiencing an availability of an average of 97%," Venable proudly exclaims. "And we've even had days when this availability ran as high as 99%."

Paducah Shop has built itself up physically to the point where it can handle 50 units for rebuilding a year with its present force. As it was one of the last railroads in the nation to dieselize in the 1950s, IC now has a great number of units that are becoming eligible for rebuilding. Therefore IC's mechanical department has a computer program containing all essential data on each unit in the IC fleet—such information as the age of major components, the most recent repowering date, any repetitive or chronic failures of parts. This is putting scheduling back in the hands of management. As one mechanical department researcher explained, "The new computer program should be able to pick out the likeliest candidates for rebuilding before they become emergency cases."

Some of the units arriving at Paducah are real "basket cases," and are incapable of operating on their own. Some are, in fact, wrecks. Paducah Shop, however, should not be confused with the heavy-repair shop common on most railroads.

The production line at Paducah Shop is supported by a number of substations where components undergo extensive rebuilding. In some cases, such as at the high voltage cabinet substation, an all-new sub-assembly is produced. The latest types of relays, contactors and other control equipment are used. Preformed wire looms aid in assembling the cabinets. Incorporated into the final assembly are such features as automatic wheel slip sanding, automatic ground relay reset devices and solid-state components.

Paducah Shop has been slowly—but steadily—whittling away at the time required to rebuild a unit completely. At first, it took about 11 days to move a completed unit off the eight-position production line. Today, there is only a three-day interval.

IC expects to use the experience and expertise gained in rebuilding lower horsepower units in rebuilding its higher units when they reach the stage when such work is practical. When these larger units begin appearing at Paducah, even more sophisticated work will be required. For instance, harnesses for Search equipment will probably be installed, according to Venable, so that electronic diagnosis can be conducted at major repair centers. At the present time, IC has one Search unit, at its new $20-million Woodcrest Shop.

Super-railroads? No, super-transportation

Creation of intermodal transportation companies has long been talked about. But Missouri Pacific's top traffic officer is taking the concept a step farther—to the creation of super-transportation agencies which would report in turn "to a parent organization which would set over-all policy, coordinate routes and schedules and provide technical, research and other forms of specialized assistance."

Joseph A. Austin, vice president-traffic, calls the concept TT&DM—for Total Transportation and Distribution Under One Management. It would operate, possibly, in a manner not unlike the operation of AT&T and the nation's telephone companies.

What Austin sees is development of companies which could offer air, rail, truck, ocean, inland waterway and pipeline service in any combination. In addition, he notes, such companies could offer warehousing, or provide for leasing of special equipment. The over-all operation would be subject to whatever government regulation might be deemed necessary.

The efficiency of such total-transportation companies, he declares, "is almost beyond imagination." As major advantages of the concept, he cites:

—Savings in the millions of dollars through elimination of duplicate facilities, including physical facilities and overhead expense.

—Operation with a single bill of lading and with single-carrier liability.

—Utilization of the greater assets of the company "to purchase vast quantities of modern equipment and to build modern intermodal terminals and central maintenance bases."

—Operation on tightly coordinated routes and schedules, using the latest in computer technology to fit service to demand and need.

—More efficient use of total national transportation resources.

Today, Austin points out, "all of the physical elements of total transportation are in existence. But one key element that is lacking is a unified, single management. As a result, we are squandering a great deal of the efficiency inherent in our national transportation network." MoPac itself, he points out, can now offer a number of separate services—but "even MoPac falls short of being a total-transportation company."

MoPac has long held strong views in favor of intermodal transportation and intermodal companies. Austin's "step-farther" views came in a talk before the Traffic Club of Houston.

Lines on Labor

GUS WELTY

THE BIGGEST GAP OF ALL . . .

So far as can be determined, nobody has ever accused Penn Central President William H. Moore of being vague, uncertain or otherwise indecisive in his thinking or in the ways in which he expresses that thinking. But PC's chief executive officer may have outdone himself in recent comments on the railroad industry's "productivity gap." Change in labor practices is, of course, one of the four premises-for-successful-reorganization cited by PC's trustees. PC is making progress in three of the four premises-areas. But, says Bill Moore, "Perhaps the most difficult problem of all is this 'productivity gap' of railroad labor. For Penn Central, this is more than a gap. It is a financial chasm which must be bridged." Moore praises rail labor for its help in improving PC service. In improving productivity, however, "so far, by and large, our ideas and efforts have been met with indifference and resistance by the labor unions, the legislators and most of the public."

LABOR TAKES ITS CUE—AND PRODUCTIVITY RUNS LAST

Considering the productivity situation broadly, PC's top officer is equally outspoken:

"We are living in an age of permissiveness and inflation. Organized labor has taken its cue from the former and has fueled the latter with its demands for unwarranted wage increases. Productivity? It's running dead-last. In the private economy in 1970, compensation-per-manhour rose by about 8% over 1969. Meanwhile, output-per-manhour in 1970 rose by only 1.7%. The Council of Economic Advisors estimates that between 1970 and 1975, output-per-manhour will grow by only about 3.1% annually. If compensation-per-manhour continues to grow at just 8%—and the predictions are much higher—we're bound to have inflation like we've never seen before."

AND RAILROADS GO LIKE LAMBS TO SLAUGHTER

In the railroad industry, Moore declares, "Organized labor not only demands inflationary wage increases but gets them. They are even legislated by Congress. In the railroad industry—and in much of American industry—collective bargaining, to union representatives, starts on this premise: 'We will give up nothing we have. The question is, How much more can we get from you?' "

The result: "Railroad labor unions make demands for pay increases over three years of well over 40%—and cash-starved railroads pay like lambs going to a financial slaughter. And what do railroads get in return for this so-called collective bargaining and huge pay increases? Do they get increased productivity commensurate with that enormous cash outflow? Do they get work-rule changes commensurate with that enormous cash outflow? The answer is 'No' on both counts."

Bill Moore pleads for change in attitudes, and a return to balance. His warning is clear: "The railroad industry is in a fight for survival, and it will drown in this sea of inequities unless changes are made—and made very soon."

Is anybody listening?

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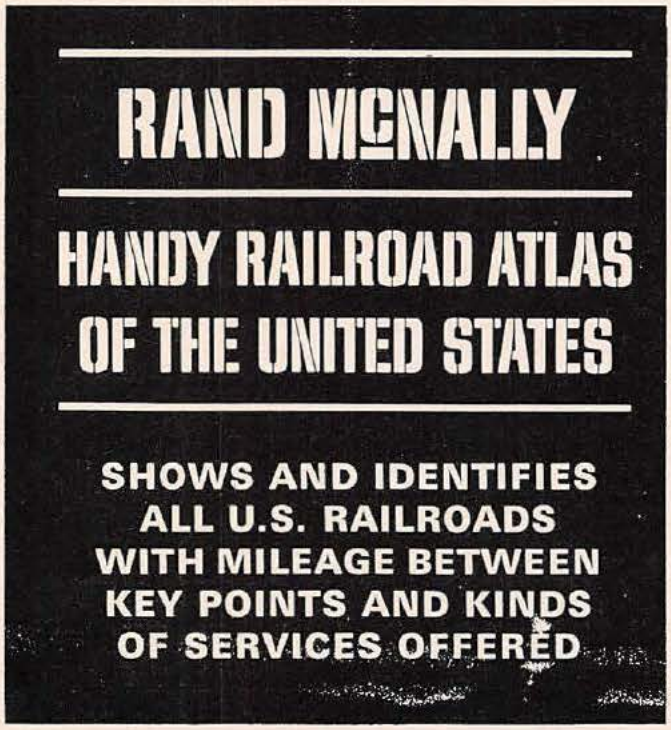

CONTAINS:

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U.S. Railroad Distance Table.
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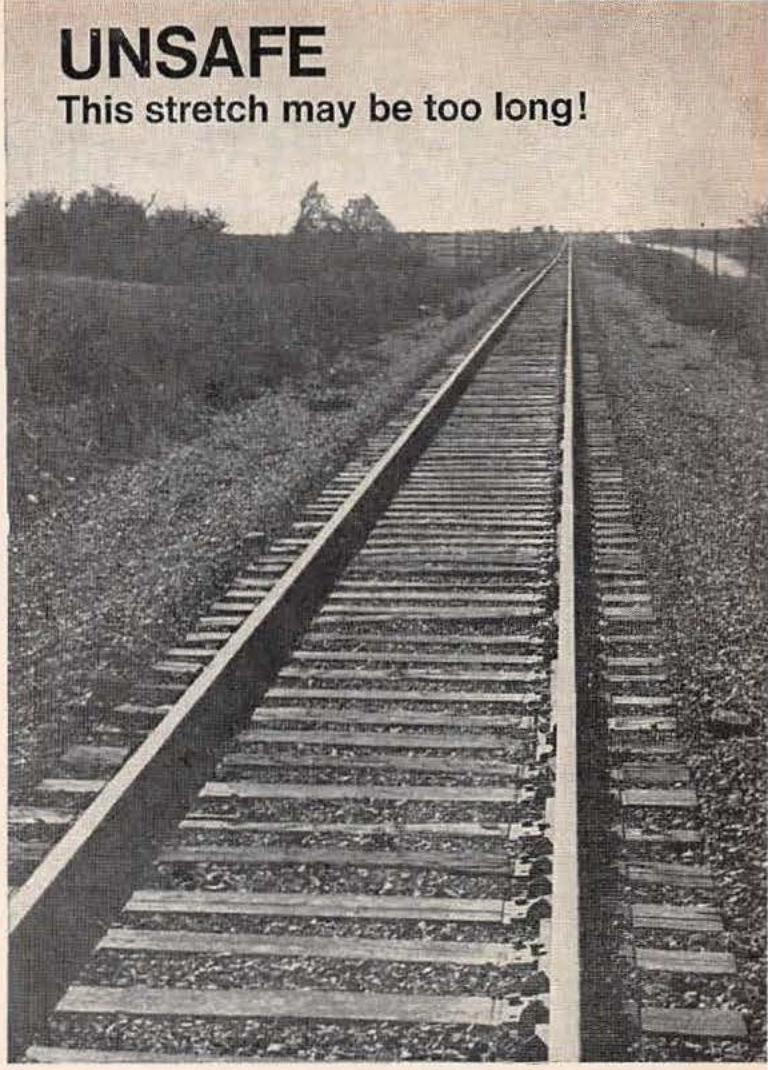

Our new rail-mounted SERVOSAFE® Hot Box Detective™ prevents axle burn-offs and derailments.

It's a good thing to have on your railroad.

But, for safety's sake, don't stretch a good thing!

Do you have long stretches of track without SERVOSAFE protection?

Recent studies have revealed that such factors as heavier car loadings, faster train speeds and greater accelerations have combined to increase the incidence of overheated journal boxes. This has prompted many railroads to review their spacing of hot box detectors. Up to now, the average spacing has been 25 to 30 miles apart along line-of-road. Under today's conditions, however, a hot box can develop in less than 25 miles and cause a derailment *between* detectors.

One solution becomes self-evident: closer spacing of hot box detectors for more protection. A SERVOSAFE system will not prevent a hot box—but it will detect, locate and warn of a hot box before the condition worsens into a dangerous, costly axle burn-off and derailment!

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That's why most prudent, progressive railroad managements agree when we say, "More SERVOSAFE protection isn't costly—*lack of it is!*"

Model 8808 SERVOSAFE Hot Box Detective Rail-mounted scanner "looks" at journal bearing behind truck frame with a vertical, close-in target scan for greater uniformity and accuracy. Scanner is securely clamped to the rail (no drilling required). Accuracy is not affected by rail pumping, running or lateral movement.

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MEMBER RPI

Circle 13 on coupon page 39

Watching Washington

REID BEDDOW

AMTRAK'S INAUGURAL

It was May 1, 8:30 a.m., in Union Station, Washington; and on the track, next to the red carpet on the boarding ramp, was the Amtrak Inaugural Special, a shiny Penn Central Metroliner. Amtrak's official first train, it was poised to carry DOT Secretary John A. Volpe, Amtrak President Roger Lewis, assorted other VIP's, some exceedingly pretty girls, and the press to New York and back.

Naturally and first, there was appropriate hoopla. Hoopla this day was two banjo players strumming out railroad songs, klieg lights, shouting TV cameramen, and short speeches from Important People ("This is an act of profound public responsibility," said Secretary Volpe). Though invited, there were almost no industry representatives on hand, but AAR Operations Vice President R. Rex Manion showed up to bestow his blessing and SCL Vice President for Passenger Traffic J. R. Getty rode the train to New York (where, a good company man, he boarded the Silver Meteor to return to Richmond).

As the train pulled out at 9:29, an Amtrak hostess cooed, "It's the end of an era," a little too nostalgically. A stroke of public relations genius was the presence on board of two young men, Tommy and Bruce Edel, nine and seven, respectively, sons of FRA Public Affairs Director Edwin E. Edel. They literally walked to New York—back up and down the car aisles—distributing Amtrak buttons (his father's son, Tommy was overheard telling a New York news man "I think Amtrak's great!").

"I WON'T WORK FOR A RAILROAD"

Roger Lewis, Amtrak's new president, was softspoken and gentlemanly. Though he had attended an AAR board luncheon the previous day, Lewis definitely was not soliciting rail industry advice. "It's like a change in political administrations," he said. "The outs figure they can tell the ins what they should do, but the ins don't want that kind of advice." It turns out Lewis's father worked for the old Los Angeles-Salt Lake City Short Line. Confessed Lewis, "When I left home as a young man I told my Dad I don't know what I'm going to do, but I sure as hell won't work for a railroad."

Up in the operator's cab, Engineer Howard J. Ziethen, a 30-year PC veteran who instructs other Metroliner operators, clocked a 2-hour, 41-min. running time to New York at an average speed of 105 mph. His only crisis came that afternoon as the train whistle-stopped back to Washington. Outside Wilmington, a hotbox detector activated, causing controllers to signal the train to stop for wheel inspection. Passengers, dining on roast beef and asparagus, were oblivious.

It was a pleasant enough excursion. Whether the fact that two of the train's four cars were virtually empty (127 guests rode the train up, only 55 back) was symbolic of the future, only time would tell.

BN aims to cut billing-card errors

Potentially costly errors on AAR car-repair billing cards should be few in number on Burlington Northern — thanks in part to a full-scale educational program involving about 350 BN field and home-office personnel.

Under the supervision of Harold Wales, manager personnel training-mechanical division, BN is handling the 15-lesson course over a seven-month period—using materials prepared by the Railway Educational Bureau as well as the Bureau's testing and checking facilities. BN offered the course on a voluntary basis, with the company picking up all cost—and virtually everybody involved picked up the offer. BN/REB students include field and general-office supervisors, along with employees in such jobs as billing write-up and billing clerk.

The program is handled basically as a correspondence course, but wherever possible those taking the course get together once a month for a discussion of the material. The need for such training on a concentrated basis was brought home with the recent conversion to a new form of billing card—and with an increase in the incidence of billing-card errors which followed the conversion.

As Wales puts it, the purpose of the program is "simply to eliminate these costly errors, by providing instruction in the use of the AAR interchange rules and in the proper preparation of billing cards."

New daily freight spans the continent

A new, fast, daily freight service linking Florida and California has been jointly inaugurated by the Seaboard Coast Line, Louisville & Nashville and Southern Pacific. The train cuts 48 hours off previous runs. The rail route is the most direct between Jacksonville, Fla., and Houston, Tex. At New Orleans, Missouri Pacific also connects with the train, providing coordinated service between Florida and the Southwest.

SCL, L&N and SP have created a pool of diesel locomotives to move the run-through trains. Pre-blocking of cars in the train by destination permits it to bypass most yards and terminals along the route. Westward, the train leaves Jacksonville daily at 9 a.m., E.S.T. The train departing on Monday, for example, reaches Houston on Wednesday, the West Coast on Friday.

A day in the life of a CTA car.

6:05 a.m.

Steelworkers begin arriving for the early shift on Chicago's south side. Nickel stainless steel gives the Chicago Transit Authority's newest fleet of cars enough brawn to serve riders dependably for years to come.

7:50 a.m.

The white-collar migration to the Loop surges and peaks. Cars carrying up to 150 passengers cannot compromise on safety—and the stainless combination of high strength, light weight and corrosion resistance is unique in its price range.

11:20 a.m.

Shoppers descend on stores like paratroop divisions. Bargain hunters in the railroad industry appreciate the long-range savings in power costs offered by lightweight stainless steel cars.

2:45 p.m.

School's out. Stainless interiors withstand the hard knocks of horseplay longer and stronger than other materials. Stainless steel never needs painting or repainting. Lipstick and crayon scribbles come painlessly off stainless.

7:30 p.m.

Curtain time at the movies, and the good bleacher seats at Comiskey Park are filling up. Over 100,000 Chicagoans ride stainless CTA cars to work and play every day.

CTA's 150 new stainless steel transit cars will give Chicago safe, comfortable, dependable, economical service for decades. Shouldn't your city keep up with Chicago?

For more data on nickel stainless steel transit cars, write to Dept. RA571, The International Nickel Company, Inc., One New York Plaza, New York, N.Y. 10004. In Canada, The International Nickel Company of Canada, Limited, P.O. Box 44, Toronto-Dominion Centre, Toronto 111, Ontario.

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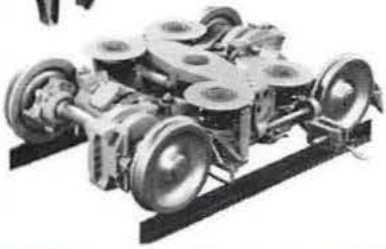

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MOVING PEOPLE

Interests heats up as WMATA circulates specs on 550 cars

At least four aerospace firms are among those companies poring over 250 pages of technical specs circulated by the Washington Metropolitan Area Transit Authority for a 550-car contract—the transit industry's prize of the century—that will be awarded next Dec. 15. The Rohr Corp. (now building the BART cars), United Aircraft, Boeing, and Ling Temco Vought are studying the specs along with General Electric, Pullman-Standard, St. Louis Car, Hawker Siddeley, and Toshiba (representing a consortium of Japanese suppliers) is interested. The order is valued at approximately $155 million; a WMATA spokesman says it will be "the largest single subway car contract in history." Proposals will be submitted in June. Bidders who don't measure up will be eliminated. Final bids are to be opened in November, followed by evaluation and award of the contract in December. One unusual specification: the cars must be equipped so that passengers can speak to the driver through an intercom system—a crime deterrent.

St. Louis eyes early start on Phase I of 86-mile rail transit system

After years of on-again, off-again studies, St. Louis now has a firm regional transit plan, calling for an 86-mile, $1.5-billion rail system (of which 60-odd miles would be underground). Prepared by the joint venture firm of Parsons Brinckerhoff-Tudor-Bechtel, with the help of the local firm of Sverdlup & Parcel, the plan is now at the U.S. Department of Transportation for approval and revisions. Funding will, of course, be the big problem. Recognizing this, the planners have proposed a first-phase, 32-mile system that could be built for a relatively modest $633 million. Given two-thirds Federal aid (under the Urban Mass Transportation Assistance Act of 1970), local planners feel that they can reasonably expect to scrape together the necessary local share from one of several schemes now under consideration. One possible source of founding: a $600-million highway/transit bond issue which has been approved by the House, and will go to a state-wide referendum if okayed by the State Senate. Says one St. Louis leader: "Transit builders can learn a lesson from highway builders: you build what you've got the money for. We have all seen a lot of unfinished highways that suddenly, miraculously get finished."

Reading president urges commuter-service takeover

Reading Railroad's commuter service needs, among other things, 150 new cars costing about $400,000 each. But what businessman can justify a $60-million expenditure on an operation that loses $6 million a year? Reading President Charles E. Bertrand posed this question before the Delaware Valley Council as he called for public ownership of the commuter system. Bertrand described as "totally inadequate" the present system under which Reading contracts annually or semi-annually with the Southeastern Pennsylvania Transportation Authority for an operating contract "which is dependent on uncertain annual appropriations from various levels of government." He said the Reading, which sustained a loss of $5.6 million in 1970, has been spending money it doesn't have to maintain commuter service in anticipation of having some form of transit authority take it over. "While this effort began in 1958, it is now 1971 and the issue is still unresolved," said Reading's chief.

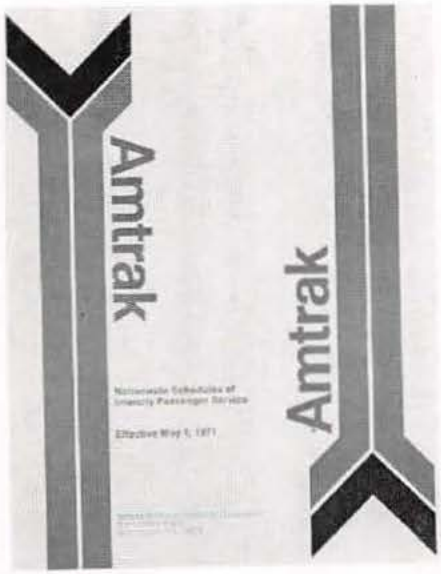
DOT grants:

To the Metropolitan Transit Authority of Baltimore, $150,000 as DOT's part of a $225,000 technical study to develop a plan for "the unified and coordinated operation of Baltimore's mass transit system" . . . To the Southeastern Pennsylvania Transportation Authority, $3.2 million to cover two-thirds of the total $4.8-million cost of modernizing the 65-year-old Juniper Street and Eighth Street stations on Philadelphia's Market Street subway line . . . to the Port Authority-Trans Hudson Corp. (PATH), $78,500 toward the total $117,500-cost of planning the modernization of 11 New York and New Jersey commuter stations.

Contracts awarded:

To General Electric, by the Washington Metropolitan Area Transit Authority, $1,838,949, to supply equipment for six substations and five tie-breaker stations. . . . To Wiley & Wilson, Lynchburg, Va., by WMATA, $451,737 for design of the Potomac Avenue station. (WMATA has so far let 71 contracts for station construction, design, or utilities relocations, for a total of about $211.8 million.

Amtrak's timetable is full of surprises



It has been nearly a century and a half since the first scheduled passenger train service began operating. May 1, 1971 marks the date of the first public schedule of nationwide intercity train service. Amtrak lists each of its 164 passenger trains in a well-done 32-page folder of more or less conventional timetable format. (We should acknowledge here that the Official Guide of the railways has published all intercity passenger train schedules within a single cover for 103 years now. These listings, however, were always listed under the roads that ran the trains. It usually took a travel agent to put together the different schedules to get from one city on one railroad to a second city on another railroad.)

The Amtrak timetable pays little attention to the railroads involved. A two-page center spread map gives the initials of the railroads along each route. Each time schedule shows, in small italicized print, the name of the railroad over which the trains operate.

The timetable is full of surprises for those who did not have an inside track to Amtrak's schedule planning. For instance: one can board a through sleeper or coach at Seattle, three days a week, and ride straight through to San Diego, 1,503 miles, without a change. San Francisco is no longer on the route of the Coast Daylight. Service is via Oakland, from Seattle three days a week, and originating at Oakland the other four days, operating on the east side of the Bay to San Jose. If there is an SP suburban train connecting from San Francisco and the peninsula suburbs, Amtrak doesn't show it.

There are few changes in the Boston-New York and Boston-Washington services or the connecting Hartford-Springfield trains. New York-Washington service benefits from the addition of two more Metroliner runs, bringing the total to nine Metroliners a day in each direction.

One of the biggest service changes is the reinstitution of through coach and sleeping car service—not only from Washington to Chicago, but also from Washington to St. Louis, and the operation of the Washington-Baltimore connection via Penn Central's Columbia & Port Deposit branch between Perryville, Md., and Harrisburg. There has been no scheduled passenger service over this route for nearly 40 years, and the service even then consisted of branch line locals. Through trains always ran over the Northern Central route through York, Pa. The sleeper coach which formerly operated between New York and Chicago via Buffalo and Cleveland will be included in the consist of the Broadway.

The former "Spirit of St. Louis" is combined with the "Broadway" from New York to Harrisburg and both trains pick up their Washington cars at the latter city. Sleeping car passengers can relive the experience of having their train shuffled during the journey, and can hope that the switching crews are both skilled and in good humor. The St. Louis train will run through to Kansas City over lines of the Missouri Pacific.

There is a page of sample Amtrak fares, and a special schedule of New York-Washington coach, parlor and Metroliner fares. None seemed changed. For example, it is still $48 by coach from Chicago to Houston (cheap) and it still costs $98.11 for a one-way trip in a roomette between New York and Chicago (expensive).

The timetable is full of surprises but don't let us spoil your fun. Grab one of the 50,000 that Amtrak put through the presses and explore its pages for yourself.

—Robert G. Lewis

Amtrak gets

Despite all efforts to switch it into the rip track, Amtrak was on the main line, on schedule, May 1.

What happens next is anybody's guess. But at least the quasi-governmental National Railroad Passenger Corp. did make its on-time departure. It didn't have Rock Island, Southern and Rio Grande on board. But it did have all its proposed routes intact (with one alteration on account of Rio Grande's stay-out decision). It had the best wishes of "member" roads. And it had a sudden revival of interest in the railroad passenger train, as newspapers and television gave rail passenger service more attention and time than it had received in years.

Amtrak's challenges came in the courts and in Congress. One observer described the last week in April as "one big circus," with the politicians getting on record for the home-folks—making waves and not much else. One exception was in Illinois, where the Attorney General got a Federal judge to order Burlington Northern to continue a pair of non-Amtrak trains for a week (though another Federal judge rejected similar arguments in suits against Illinois Central and Chicago & North Western).

Railway Age reporters rode passenger trains, before A-Day and on the big day. On the official inaugural run, Washington Editor Reid Beddow went along with Transportation Secretary Volpe and a gaggle of other VIP's on the showcase Metroliner. The Secretary was full of hope for Amtrak's future, and Metroliner service, as usual, was good. Associate Editor Bob Bartley did the pre-Amtrak riding and he found confusion, among supervisors and crew members. About the only people Bartley found who were positive about what was happening were the souvenir-hunters including the lady who stuffed a silver cream pitcher, cream and all, into her purse.

For all concerned, there was a certain amount of grieving. Passenger-train employees, for instance, felt a sorrow—but one which seemed to have little to do with the sorrow their leaders were expressing in court. Union lawyers were outraged that Secretary of Labor Hodgson only granted six years' protection (instead of lifetime protection) against economic loss. But the employees, Bartley found, were more concerned with (1) the uncertainty of

the show on the road—and on time

SALUTING AMTRAK BIRTH were Transportation Secretary John A. Volpe (left), and Roger D. Lewis, Amtrak president, aboard first Metroliner trip under Amtrak auspices.

what they would actually be doing May 1 or 2, and (2) saying goodbye to old friends with whom they had worked for years and years.

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As things turned out, of course, Amtrak got what the newspapers called "All green."

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The district court questioned its jurisdiction under the Amtrak law. The court added: "If this court were to declare invalid the contracts which had been entered into between the corporation and the railroads, the statutory plan would be seriously jeopardized. The frustration of the intent of Congress and a threat of grave injury to the public and to the railroads should be obvious."

Referring to the labor-protection conditions imposed by Secretary Hodgson when railroads and unions were unable to agree, the court said it found that they satisfied the law and "in fact exceed those requirements in significant respects." Perhaps most significantly, the court observed, "the protective arrangements exceed the requirements . . . by extending the protective provisions from four to six years."

The District court ruling was immediately appealed. But, after hearing about two and a half hours of argument, a three-judge appellate court panel entered a brief order denying the appeal, with the comment that "in none of these cases is there the requisite showing of irreparable harm."

Despite its victories in Congress and the courts, however, Amtrak faced May 1 looking much as Southern President W. Graham Claytor, Jr., described it: an "unknown corporation and unknown management."

Amtrak's actual operating practices also remained unknown. Railroad men are still concerned about contractual agreements on costs. Operating officers are also wary of interpretations which may be placed on service standards. Contracts provide that the railroad will offer service "in an economic and efficient manner and shall give appropriate recognition to the importance of on-time passenger train operations and passenger comfort and convenience. Railroads shall make every reasonable effort to maintain the schedules."

There is, in addition, a reference to performance of Amtrak service giving due regard to "the avoidance of unreasonable interference with the adequacy, safety and efficiency of railroad's other operations."

What can Amtrak's riders expect? In some instances, a faster point-to-point ride—but for the time being, not much difference in the way of equipment. Amtrak did have on display in New York "refurbished" equipment—but it will be some time before the corporation will have all-new cars in service. A survey of most of the industry's existing equipment has been completed, and it will be up to Amtrak to pick and choose the best of the lot. Since the corporation will be operating only about half as many trains as the railroads have been running, observers guess that the car supply should be adequate.

Amtrak will perhaps be handicapped by the limited funding it has. But it will also have certain advantages—such as single-corporation responsibility for the service, in the opportunity to experiment more freely (there is a feeling that Amtrak may regard the Northeast Corridor as its real showcase—Secretary Volpe talked glowingly on A-Day about the traffic potential there—and this could lead to problems if there's any downgrading of service in the West, where it has been superior. ■

and also stressed the importance of a "comprehensive plan for the entire area."

on in a thoughtful essay, But is it railroading? [illegible] the thinning ranks of doubters. In any event, we have never, in these transit issues, neglected the information needs of our railroad readers.

subways serves to ventilate them, although Mexico's Metro is also plagued with some of the heat problems which

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the show on the road—and on time

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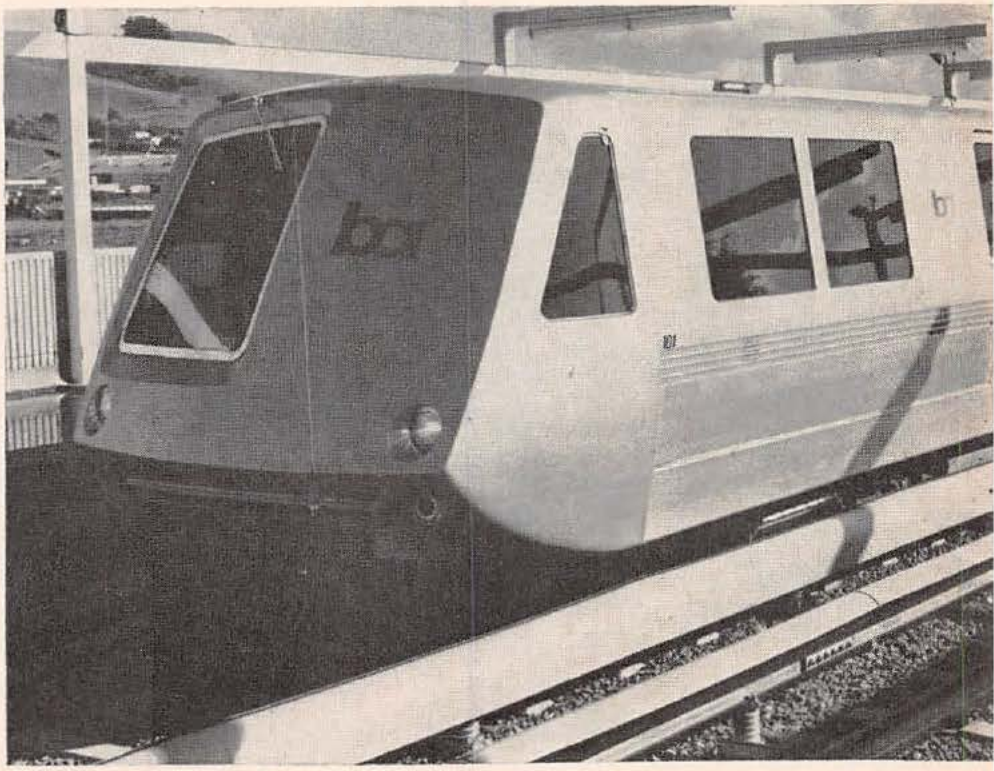
BART: The prototype route

The Bay Area is reaping big benefits from its decision to build prototype cars before going into full production.



THREE-CAR TEST TRAIN operates through station which is virtually complete except for

By **FRED N. HOUSER**, Mechanical Editor

"We are getting a 100% effort from our suppliers, from our consulting engineers and from our own staff," says B. R. Stokes, general manager of California's Bay Area Rapid Transit District. Problems with BART's highly sophisticated rolling stock and wayside control system have definitely set back any plans for beginning revenue service and, simultaneously, have stepped up pressures to get the 75-mile system into operation.

Right now, Stokes is most concerned "about the problems we may not yet have found." And he credits the decision to build and test ten prototype cars with insuring BART's ultimate success. It was always anticipated, he stresses, that the new concepts incorporated in the high-speed, highly automated transit system for San Francisco, Oakland, and other areas east of San Francisco Bay would not be implemented without difficulties.

● **Off and running?** When will BART begin to operate? "When we have the system ready to run," says Stokes. "We never had a fixed date." What BART planners did have was a prototype appraisal program that would permit debugging without the pressures of providing service for paying passengers. Nine months and nine cars after the beginning of the testing, the answers are beginning to shape up.

Under the best of conditions, BART probably cannot begin revenue service until early next year. "Fixes" have been developed for many of the difficulties. The tenth prototype car has been held at the Chula Vista, Cal., plant of Rohr Corp., the carbuilder, to incorporate as many of them as possible.

Only after BART and Parsons Brinckerhoff-Tudor-Bechtel, its engineering consultants, are satisfied with the prototypes, is Rohr being given the go-ahead for cranking up the car production line. Then the remainder of the 250 cars in the $60-million order will begin to move to the Bay Area.

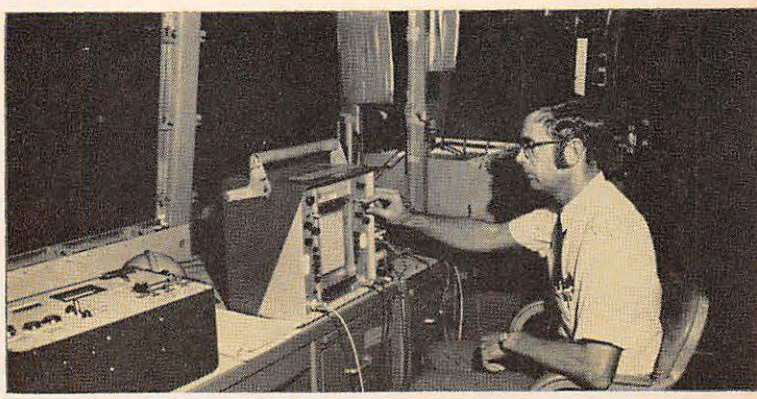
● **Nearing completion.** Meanwhile, the fixed facilities are nearing completion. The right-of-way, which divides roughly a third subway, a third aerial structure and a third surface lines, is essentially complete. Most of the stations are done. Track laying is progressing and will be finished on schedule. Except for Westinghouse Electric's automatic train control, the 20 miles of double-track line from Hayward to Lake Merritt in Oakland are now available for car testing. Cars have been run beyond Lake Merritt to check clearances in the subways and junctions in Oakland. Westinghouse has had Laboratory Car C from the Diablo test track of 1965 and 1966 out checking the wayside automation equipment.

It was Car C which made the recent "hands off" run near Hayward, hitting the designated 80-mph top speed and then automatically stopping well within the five-foot tolerance at the Hayward passenger station. The car averaged 50 mph on the run and maintained speeds within the 2-mph tolerance required by BART under all conditions. While a temporary control has been set up, regular trains will be supervised and dispatched automatically from the Train Operations Center in the basement of BART's new headquarters building at Lake Merritt in Oakland (RA, April 13, 1970, p. 36).

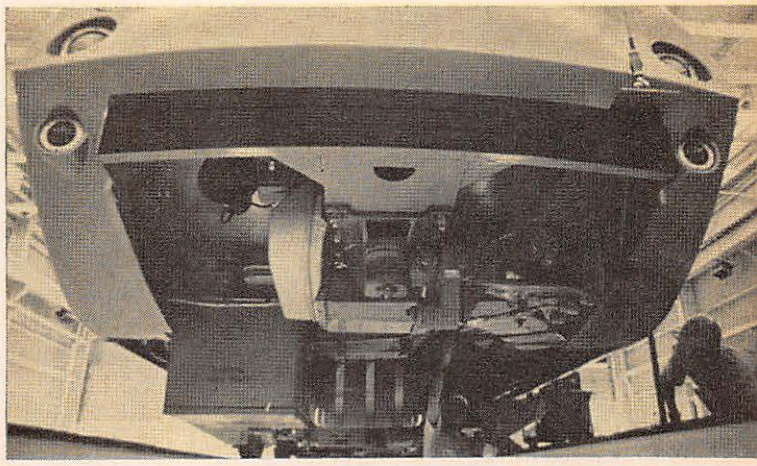
● **Regional benefits.** While BART

pays off

the roof on the platform canopies and fare-collection system.



INSTRUMENTATION is installed in cars rather than seats.



WHAT'S UNDERNEATH COUNTS and gets careful inspection.

trains may begin operating somewhat later than was originally projected, there has been no let-up in construction which can be credited directly to the new transit system. Already more than $850 million in new office and retail construction is complete or building within walking distance of the six subway stations of the District's core cities of San Francisco, Oakland and Berkeley. This total is greater than the original $792-million bond issue which brought the BART system into existence in 1962.

In San Francisco more than 500 floors of new office space have gone up. A dozen new hotels are up or planned. Yerba Buena Center and Embarcadero Center, brand-new convention and commercial developments, will be directly connected to BART stations. Oakland has seen many new cultural and commercial projects sparked by the building of its new transit system. Berkeley early recognized BART's impact and planned to take advantage of rapid transit. In suburban areas other commercial and apartment complexes are building.

● **Line extensions.** While the 75-mile system originally authorized is being pushed to completion, already there are active studies of two possible extensions. An UMTA grant is financing an engineering investigation of running BART from its present San Francisco terminal at Daly City to the San Francisco International Airport. A separate transit system is under consideration for connections to Oakland's International Airport and its Coliseum.

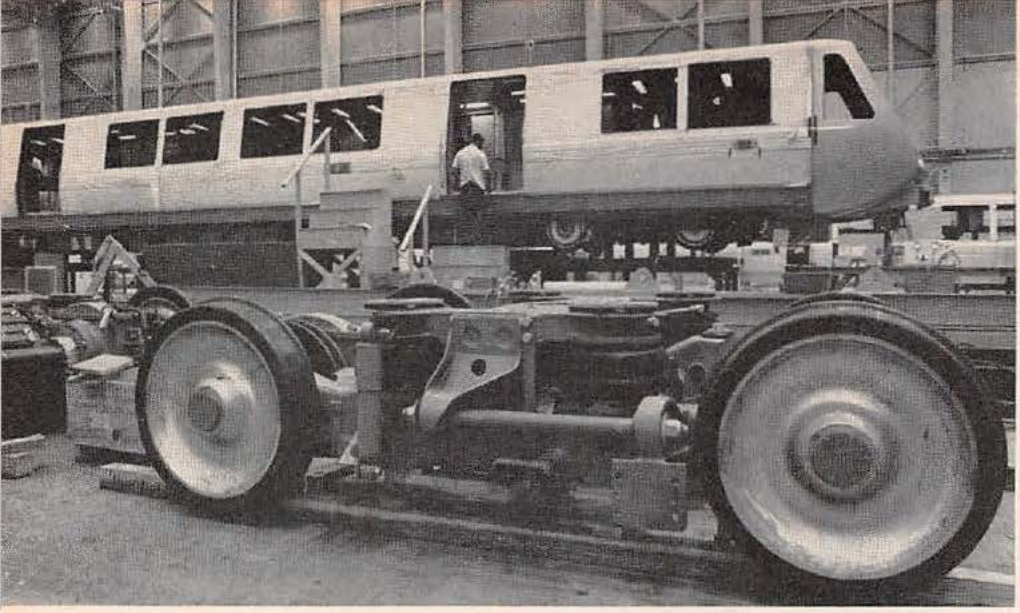
● **Time of troubles.** Even before the first car was delivered to BART's South Hayward Shop late last August, some changes had already been made in it during construction. By the time the car began running about a month later, additional problems had manifested themselves.

Each succeeding prototype came with as many as possible of the "fixes" as they were developed by suppliers. And BART then got the cars out on the line, one, two and three at a time. Because the wayside control system was not complete, the prototypes have had to be operated manually.

While all this was going on, Southern California experienced its devastating earthquake. Right at the epicenter in Sylmar was the plant of Hurst Airheart, the subcontractor which developed the electro-hydraulic disc brake system that is going on all 250 cars. The destruction of this facility has set back delivery of any additional cars by at least 60 days. David G. Hammond, BART assistant general manager, says the quake must be considered an "act of God" and the delay probably will not result in any penalty for Rohr.

For the cars in operation, one of the most frustrating occurrences has been the tendency of the traction motors to "flash over." This phenomenon has also plagued many diesel-electric locomotives and involves the short circuiting of heavy currents with resultant motor damage.

Each BART car is propelled by four 150-hp, 450-volt direct current traction motors of relatively conventional design. While BART's 1,000-volt third rail represents about 50% higher voltage than that used on other U.S. transit systems, Westinghouse Electric has designed a motor which consistently tests better than previous models. Under the cars, however, it exhibited



SUSPENSION SYSTEM has pleased BART's engineers; LFM truck is being prepared to go under a car at the Rohr plant in Chula Vista.

the unpredictable propensity to have flash-overs.

E. John Ray, BART's director of operations, feels that the cause of the motor problem "has to be something simple." Joseph Marshall, who heads Westinghouse Electric's team on the BART project, reports that much analysis seems to indicate that the self-ventilated motors are picking up mill scale from the newly laid running rails. These flakes of conductive iron oxide could indeed form paths for unwanted current flow. This diagnosis seems to have been confirmed when Car 101 was fitted with air filters on the motor air intakes. Promptly its flash overs disappeared. Now it is being run as much as possible with extensive instrumentation to assure that the cause of the problem has really been pin-pointed. And Westinghouse is preparing to fit the production motors with air filtration.

● **Smooth ride.** Even at this stage, on rail which has not been ground and on wheels which have numerous small flat spots developed in the course of testing, BART's car "is among the best riding of test vehicles," according to John Ray. He rates performance of the LFM-Rockwell truck suspension as "great" and adds that this is on the basis of rides in cars which have none of the final carpeting, none of the final underbody treatment and have holes cut in the floors for test purposes.

The Westinghouse solid-state chopper traction control system has performed well and seems not to be involved in the problems with the traction motors. The retardation produced by a combination of dynamic and electro-hydraulic friction braking has also proved to be satisfactory. Westinghouse is now refining its automatic train control system, and has been holding off on the assembly of the electronics and the logic circuitry which is involved.

A number of changes are being made in carbodies. While the car has been squeeze tested to BART's satisfaction, it is planned to make some change in roof construction in the production cars. To solve an interior noise problem, the air conditioning evaporator has been split into two units, each of which will cool half the air in the carbody.

● **Final count-down.** Once all the problems are resolved, Rohr will be given the go-head for production. BART then wants a minimum of 25 cars to be operated for a period of six months before the beginning of revenue service. This will permit the final equipment shake-down and will provide an interval for training all BART personnel.

Each of the more than 400 train attendants, the on-board (one per train) personnel for BART, will be put through a four-week training cycle. Some of these attendants are already operating the prototype cars. Others of the operations organization are manning the control system and communications facilities. As BART accepts facilities from its contractors, its people are taking over operations, security and maintenance.

Already men from BART's equipment department are working on inspection at Chula Vista where Rohr has also conducted formal familiarization sessions with the cars. Later there will be major maintenance training courses at Hayward.

Work is going ahead on the setting of final fares for the system. On BART's master schedule, other details such as the cash handling procedures, design of uniforms and final training procedures are beginning to be worked out. A professional public relations agency has been retained for promotion of the transit line and for education of potential riders, all of whom will be switching from some other method of travel the day that BART begins running.

Plans are being made in the Eastbay area to coordinate local bus operations with BART trains, ending many of the through bus lines which now operate over the San Francisco-Oakland Bay Bridge into San Francisco.

It will finally all come down to a question of convenience and cost. Riders will have to be sold; any dissatisfaction could find them back in their autos on crowded freeways. But BART doesn't expect that. Looking to the rolling stock, John Ray observes that "it really will be a great car when we get done. And we would rather spend the time now than later when confronted with a 250-car fleet." ■

MAJOR COMPONENT SUPPLIERS

Westinghouse Electric. . .
. . .Propulsion system, controls, diagnostic test equipment

Safety Electrical Equipment. . .
. . .Auxiliary electrical system

McGraw-Edison. . .
. . .Batteries

Grimes Manufacturing. . .
. . .Interior/exterior lighting

Thermo-King. . .
. . .Air conditioning

ABS-Plexivac. . .
. . .Air conditioning ducts

LFM-Rockwell. . .
. . .Trucks

Standard Steel Division. . .
. . .Wheels

Kaiser Aluminum. . .
. . .Wheel centers

Hurst Airheart. . .
. . .Hydraulic braking system

Westinghouse Air Brake. . .
. . .Couplers, draft gears

Aluminum Co. of America. . .
. . .Carbody extrusions

Libbey-Owens-Ford. . .
. . .Carbody glass

Swedlow, Inc.. . .
. . .Cab windshield

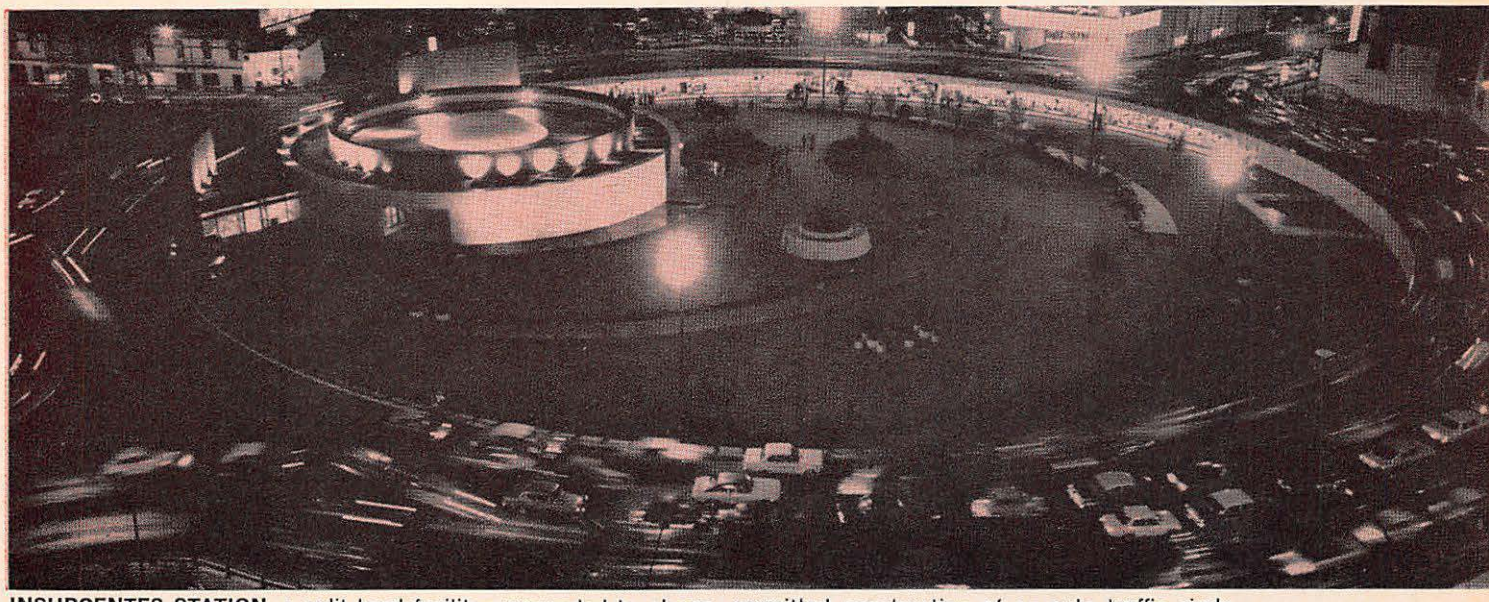
Adams & Westlake. . .
. . .Cab side window, inter-car closure

Aircraft Engineering. . .
. . .Attendant's cab, interior linings

Annellux Systems. . .
. . .Control panel and console, p.a. system and intercom

Stevens-Gullistan, Mohawk. . .
. . .Carpeting

American Seating. . .
. . .Seats



INSURGENTES STATION, a split level facility surrounded by shops, permitted construction of an auto traffic circle.

Mexico City's Metro pays its way

Members and guests of the Institute for Rapid Transit will gather in Mexico City June 8-11 for IRT's 1971 annual meeting. They will see, among other things, North America's newest (and the world's handsomest) underground transit system. For an advance look at the host city's Metro, Associate Editor Fred Houser went to Mexico City in mid-April. Here is his report.

Recently the municipal government of Mexico City received a half-million small trees from Holland, which, in part, are to increase the oxygen content of an increasingly smog-laden atmosphere. These plantings are the latest step taken by this city of nearly eight million persons to counter the vehicular "population explosion" threatening to engulf both citizens and roadways.

Well before its arboreal project, however, another and more significant pollution-curbing step was taken with the opening of Mexico's first rapid-transit line in September 1969. By September 1970 a second route was in operation. Last November a third line began moving passengers, completing almost the entire 25.5-mile system, insofar as present authorizations go. What has not stopped growing, however, is patronage, which is rising at 2% per month, according to Antonio Alegria, assistant director general of the Metro system who is spearheading the plans for next month's meeting of the Institute for Rapid Transit (IRT) in Mexico City.

● **Stemming the flood.** Mexico City is in Mexico's Federal District, a political entity somewhat akin to the U.S. District of Columbia. The System of Collective Transport (STC) of the Federal District operates the sparkling new Metro subway and surface rapid transit system which is stemming the flood of cars, buses and trucks that daily flow through the streets of Mexico's capital. Metro represents one of the more notable accomplishments of Mexican engineering, and is a monument to its planner, Illimado Bernardo Quintano.

While it is no easier to get the average Mexican out of his auto than it has been in the U.S., Sr. Alegria reports that Metro ridership has risen faster than expected. Shortly STC will consistently be handling a million riders each weekday (it has already done this on isolated occasions). The estimated revenues of 356 million pesos (12.5 to the U.S. dollar) for this year will more than cover operating costs, including the payroll for 2,000 employees. In fact, STC has regularly supported its operations from the "fare box," although it was never expected that it should also produce sufficient revenue to pay its fixed charges. A loan by French banks supplied much of the $400 million required for construction.

The city is built on an ancient lake bed. Hundreds of years ago it had an elaborate system of canals and bridges to facilitate urban movement. It was in just the past decade, however, that former President Gustavo Diaz Ordaz authorized building another regional transportation system which would be of higher capacity and more thoroughly automated than ancient Aztecs (and even most contemporary Mexicans) could ever conceive.

● **Old plans revived.** As elsewhere, transit route studies needed only be taken out of municipal files, dusted off, and altered to fit the new patterns of urban growth which had evolved in the decades since they were first made. Line 1 went in virtually as had been planned. Line 2 was substantially lengthened, and Line 3 was shortened. Construction of the Metro started in June 1967. On Sept. 4, 1969, President Diaz presided over the inauguration of the 10.3-mile Line 1 which extends from east to southwest across the city.

Line 1, subway throughout, today handles over 44% of the riders. While the 11.7-mile Line 2, a subway and surface operation between the city's northwestern and southern edges, has been operating for less than eight months, it is now accounting for 47% of Metro's ridership. Line 3, a 3.5-mile north-south crosstown route, has just over 8% of the system's riders.

● **Over 500 cars.** Metro now operates 537 cars with 60 six- and nine-car trains running at 3¼- and 3½-minute intervals on Lines 1 and 2 respectively and at near 4-minute intervals on Line

MATERIALS USED IN STATIONS are attractive and durable. Line 1 trains take just over 20 minutes to traverse 10-mile route with 16 intermediate station stops.

3. "Peak" has a meaning in Mexico City virtually unknown to any other transit operation. Because of the working hours of various segments of the population (industrial workers: 7 a.m. to 3 p.m.; government employees: 8 a.m. to 2 or 3 p.m.; office workers: 9 a.m. to 5 p.m., or 10 a.m. to 1 p.m. and returning from 4 p.m. to 8 p.m.), there is virtually a continuous rush hour with only loading "ripples," completely devoid of traditional peaks. This means consistent train service levels from 5:30 a.m. to 12:30 a.m. when Metro shuts down for maintenance, and in itself is the major basis for a "profitability" seeming unattainable by other rapid transit systems. Fares of just over 1 peso (about 9 cents) have not deterred riders, some of whom earn as little as $2 per day.

J. Torres Moncayo, Metro's director of commercial services, reports that public acceptance of Metro is no longer advancing just a step at a time but is increasing in virtual leaps. And with delivery of its French-built car fleet now complete, Metro has kicked off a hard-sell promotional program stressing the time savings and convenience of rapid transit.

● **Looking ahead.** Theoretical capacity of the present service (which would just about maximize utilization of the existing car fleet) is around 1.4 million riders. With additional cars, the train control system would be readily capable of headways as short as 90 seconds on all three lines. If the 2% per month growth rate is sustained, Metro could well be back in the car market in the not-too-distant future. The entire system is double track and was not planned to offer a combination of express and local services to swell capacity. However, some study is now being given to financing future capital projects.

Station spacing averages about a half mile. Running time between them varies from 1 to 2 minutes with top train speed of about 45 mph. Mexico City has opted for the combination of rubber-tire and steel-wheel traction and guidance which originated in France and was first utilized in the Western Hemisphere by Montreal Metro (RA, Aug. 1, 1966, p. 18).

● **Cooperation, not coercion.** While Montreal's is an entirely underground system, over six miles of Mexico City's Line 2 is down the center of a major southside street where it has displaced the Xochimilco streetcars. Despite its corporate title, System of Collective Transport, which might indicate otherwise, Metro is responsible only for the rapid-transit system.

Mexico City's buses, trolley coaches and streetcars are gradually developing into a subway feeder system This has been by evolution and not by fiat. Government is now planning four major bus terminals on the ends of subway lines at which suburban and certain coaches will terminate, keeping them from congesting and polluting the center city. Metro is trying to establish parking zones and lots adjacent to its outer stations to intercept more and more motorists, since most of its riders now transfer from buses and trolleys.

Technically, the system presented many challenges. The clay subsoil of Mexico City's ancient lake bottoms and the frequent earthquake tremors dictated a flexible tunnel construction of minimal depth. Simultaneous with the tunnel construction, the Federal District made many alterations to avenues, streets and parks, rendering them more serviceable for twentieth century conditions, sometimes even restoring parks to a more classical appearance.

● **Archaeological problems.** A problem which delayed construction of Rome's subway for many years also confronted the builders of Mexico's Metro: preservation of archaeological objects uncovered during excavation. Thousands of objects and much new data from prehispanic and colonial eras was unearthed. Most spectacular was a huge stone Aztec circular shrine to Ehecatl-Quetzalcoatl, the Wind God, which was found on the site of the Pino Suarez station. It was incorporated in the architecture for this important transfer point between Lines 1 and 2.

In addition to the soft unstable subsoil, there is a degree of moisture (up to 80%) which also had to be combatted. When underground tunnel construction was rejected as uneconomical, the solution was reinforced concreted structures built in open excavations of minimum depth and width. The piston effect of trains moving through these subways serves to ventilate them, although Mexico's Metro is also plagued with some of the heat problems which have troubled the Montreal system.

Designers and architects sought to have the stations project an image of the city and its transit system to riders. Marble platforms, brilliant colors, ingenious direction and identification signs, constantly piped-in popular and classical music, Mexican mosaics, and fiberglass reproductions of archeological objects are among the features. Constant and obvious cleaning, a ban on eating and smoking in stations and trains, and a considerable degree of civic pride have combined to produce cleanliness which would be the envy of other systems.

The high degree of automation permits a nine-car train carrying more than a thousand passengers to be operated by one man. The bright orange 50-foot cars may each accommodate up to 170 passengers with a maximum standee load. Four double doors per side facilitate station loading. Stop intervals are programmed from the Metro's headquarters. A nine-car train has a maximum of 2,400 horsepower for acceleration. Electronic controls also regulate dynamic and friction braking to assure rapid, uniform stops.

Information from revenue turnstiles and from turnstiles at transfer points is steadily transmitted into the the seven-story Main Control center in downtown Mexico City. This data, along with the status of trains on the system, is constantly fed to computers in the Command and Control Room where operators can then take steps to optimize the system's operation. Electronic analysis of headways permits instant adjustment as passenger loads fluctuate. Metro takes 85,000-volt current from two of Mexico's major utility grids and rectifies it for the system's local distribution system.

●**Ready for visitors.** Since Metro has become one of the showplaces of a city noted for landmarks, Director General J. Espinoza Ulloa must constantly host delegations of Mexican and foreign visitors. Mexican President Luis Echeverria confounded many riders a few months ago when he rode regular trains between Revolucion station on Line 2 and Gomez Farias station on Line 1, accompanied by the president of the supreme court and the head of Mexico City's government.

Early this year Holland's secretary of transport and public works made an extensive inspection of Metro's subway and surface installations as part of the planning for new transit lines in Amsterdam, Rotterdam and The Hague. Such visits have left STC well prepared for hosting the IRT meeting on June 10 and 11. ■

Single agency urged for Chicago transit

Although they have 260 miles of rapid-transit operating track, 427 miles of railroad commuter track, 1,500 miles of bus routes and 20,000 miles of highways, roads and streets, the seven million persons living in the Chicago metropolitan area may be facing virtual transportation strangulation. There's a pretty good chance, contends T. G. Schuster, associate general counsel of Burlington Northern, that neither the wealth of existing transportation facilities nor those planned-for will be able to keep Chicagoans mobile for long.

The Chicago area needs, first of all, says Schuster, a regional transportation plan and, secondly, creation of a single transit agency to coordinate all of the area's transportation activity.

Speaking at a mass transportation conference held in Chicago under the co-sponsorship of the Chicago Association of Commerce & Industry, and the Department of Geography, University of Illinois (Circle Campus), Schuster added that "mass transit in and around the city is in serious trouble; it needs drastic surgery."

As all six commuter railroads have been advocating, Schuster continued, the Chicago area needs a plan such as CMATS (Chicago Metropolitan Area Transportation System), a unified and coordinated system embodying all transportation systems—both private and public—now operating in the area. Under the single-agency plan which CMATS feels is essential, there would be:

—An operating board composed of professional business managers representing the entire region.

—A staff of competent transportation planners charged with the duty of keeping the system progressive.

—A sole authority with freedom to apply for Federal and state grants and to assign grant priorities.

—A complete take-over of the administration of all public and private systems.

—Only one source of decisions on fares and schedules for the area.

The CMATS plan, or ones similar to it, are regarded by many in Chicago transportation circles as essential to the survival of the six-county area. Another of the conference speakers, Alan S. Boyd, Illinois Central president, described the eight-year program proposed by the Chicago Urban Transportation District for new distributor and conventional subways in the Loop area, and also stressed the importance of a "comprehensive plan for the entire area."

Dear Transit Supplier:

Slightly more than eight years ago, Railway Age became the first railroad publication to promote, on a regular basis, the cause of mass transit.* Some of the strides that have been made in the intervening years are described by the editor in his column on page 5.

Now we are publishing our 100th transit issue—an issue made possible, like the 99 preceding it, by the support of the manufacturers who stand to reap the benefits of the transit market.

This, then, is a letter of thanks to those transit-supply companies who have helped to support these issues. These companies know who they are. Our readers certainly do.

It is a letter of invitation to those companies who have not yet joined our supporting team, or have been irregular members.

In these eight years, our editors have traveled many thousands of miles, and we have invested many thousands of dollars, in collecting and reporting the best views of the experts. We have recorded the triumphs and the disappointments of transit's front-line fighters. Such transit leaders as Bill Ronan and Bill Stokes and Walter McCarter and the late George DeMent, and many others, have been kind enough to say that Railway Age has been a positive force in helping to put rail transit on the map in a big way.

We have had the satisfaction of seeing other publications climb on the bandwagon. We have had the greater satisfaction of seeing solid accomplishment at the highest levels of government.

Eight years ago many people thought we were foolishly optimistic when we forecast a $10-billion transit market over the next 10 to 20 years. Today the most conservative forecast is $20-billion in 10 years; DOT says transit needs are in the neighborhood of $33 billion in the next decade.

All of us would like to see even faster progress than we have so far seen. It is our intention, in our next 100 transit issues, to again play the role of catalyst.

While much has been done, no one knows better than you that much needs to be done.

We are going to continue to do our job. We hope you, too, will be reaching transit industry influences through our pages.

Robert G. Lewis
Publisher

* We contended then that transit had important implications for all railroaders and all suppliers, a thesis which then-editor Jim Lyne elaborated on in a thoughtful essay, "But Is It Railroading?" to which we still refer the thinning ranks of doubters. In any event, we have never, in these transit issues, neglected the information needs of our railroad readers.

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If we could afford it, we could cut the price on Timken® "AP" bearings.

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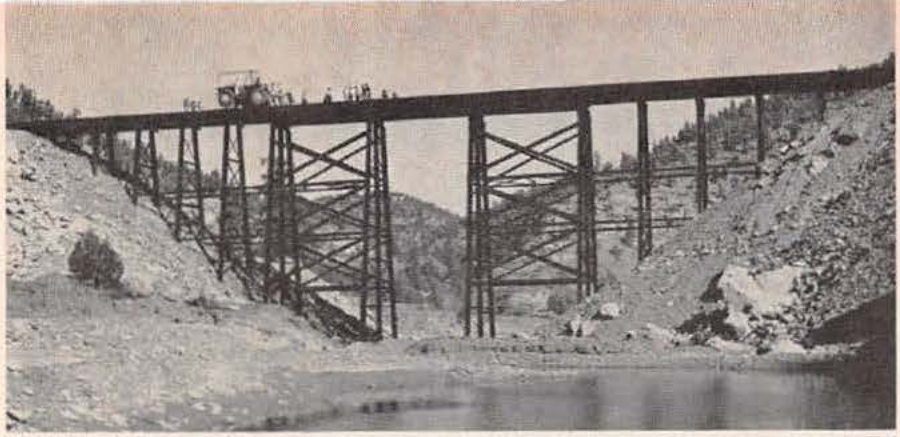


Abandonments: What reasons can

There's a time to build—and a time to tear up. And you don't have to look any farther than Santa Fe to find a road trying to stay current with both requirements.

Over the past several years, Santa Fe has laid down two substantial stretches of new track—the 38-mile York Canyon line in New Mexico and the 30-mile Rustler Springs line in West Texas. Now, Santa Fe is also moving on what is commonly referred to as "rationalizing the plant"—i.e., getting rid of little-used, unproductive branch lines.

Industry-wide, nobody really knows how many miles of track ought to be abandoned. ASTRO estimates that, on some properties, as much as one-third of all mileage could be economically dispensed with. Penn Central has already pegged 3,500 miles of light-density line for abandonment, with another 2,600 miles now under study. Santa Fe's rationalization plan, at this point, is nowhere near so extensive. But it is significant in that (1) it represents a solid effort to emphasize the positive, in an otherwise negative situation, and (2) it was undertaken only after intensive, system-wide studies which began about two years ago.

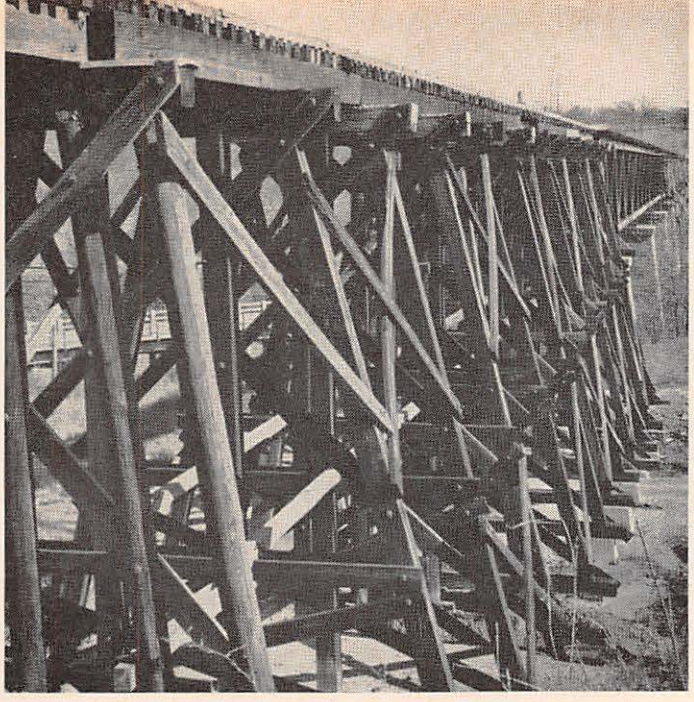
● **800 miles, slated to go.** What Santa Fe came up with was an overall abandonment program adding up to more than 800 miles of branchline track—most of it in the Midwest. To date, 13 applications have been filed with the Commission, on 525 miles of line. Thus far, two applications have been approved (with no opposition, other than the pro-forma opposition filed by rail labor organizations). Eleven applications are pending before the ICC.

Santa Fe started out by looking at every line which fell under its definition of a branch line. Rather quickly, 26 lines showed up as "questionable" and worth further study. On these segments, the road compiled revenue and expense data covering a five-year period and did commodity studies covering three years. And, while past experience could be measured from the records, Santa Fe went much further, (1) to determine the costs of future maintenance and/or upgrading, and (2) to try to project branch-line traffic potential for as far as 20 years into the future.

That matter of maintenance/upgrading had its peculiar aspects. Over the years, Santa Fe—like all roads—put available maintenance and investment dollars into the lines that were producing. Many branch lines remained much as they were when they were built—i.e., dirt ballast, lightweight rail, bridges designed for motive power and cars of an earlier era.

Larry Cena, vice president-operations, reflects on the problems that have to be taken into account: "Many of these branch lines should never have been built in the first place. Once they were built, railroads couldn't—or didn't—maintain them as they maintained the rest of the railroad, to accept the heaviest equipment. There's one thing for sure: If those lines had been maintained up to snuff, the abandonment-arithmetic would be a lot more plain today to the regulatory agencies. But instead, railroads tried to eke out a bare existence, with what amounted to minimum maintenance — without upgrading to today's competitive needs. Now, we have a couple of things facing us. One is the tremendous cost of upgrading lines which don't and won't ever carry enough traffic to justify it. The second is the possibility that others—government—may be stepping in and telling us what standards we have to use in maintaining and upgrading these lines."

● **How studies were made.** Santa Fe's studies were made under the direction of E. C. Honath, special assistant to Cena. For the most part, they involved lines in grain territory



RAILROADING IS FULL OF CONTRASTS—and they're perhaps nowhere more evident than in the area known as "plant rationalization." Taking Santa Fe as an example: On the one hand, there are the modern structures, the heavy welded rail and the heavy traffic of a new York Canyon line or a Rustler Springs line; on the other, are the yesteryear structures, light rail and dirt ballast of old, non-productive branch lines—lines for which a reason-for-existence long-ago vanished.

justify them?

in the Midwest. And they turned up some real horror stories. On one line, for example, total revenues per mile were about one-sixth of the present average per-track-mile maintenance-of-way-and-structures cost on Santa Fe. On another, the road faced either a rehabilitation cost of more than $659,000 or a heavy-maintenance cost of more than $300,000 over the next five years—and this on a line which had not originated a carload of traffic since 1968. In this particular case, the branch was actually a little-used bridge route; use of alternate routes would provide equal or better service; and consideration of the line's projected deficit along with estimates of revenue on retained overhead traffic indicated that Santa Fe would be almost $60,000 worse off "in operating the line than it would be were abandonment authorized."

In all cases, Honath's studies went deep—to cover possible savings in motive power and to take into account the cost of idle-car-time vs the cost of furnishing more frequent service. On track upgrading, study teams figured in costs of ballasting dirt track, of replacing rail of less than 85-pound, of installing rail anchors, of doing required tie renewal and upgrading of structures.

On the revenue side, Santa Fe tried to estimate "what would have to happen to make these lines profitable." Traffic and industrial-development officers were in on the discussions. If any of the involved departments could come up with a solid reason why a line or segment of line should be retained, it was wiped from the problem-line list. In the end, of course, final decision on whether to proceed with abandonment lay with President John S. Reed and Santa Fe's directors.

● **The railroad's duty.** In the end, too, Santa Fe has to rely on ICC recognition of sound business practice: "Santa Fe has a public duty to serve a vast territory, and although it is a relatively prosperous railroad, preventing losses and wasteful investments that are all out of proportion to the service needed is essential if Santa Fe is to remain a viable carrier performing a transportation function of national importance. This is especially so in the present era of accelerating costs which finds Santa Fe and other railroads suffering a decline in net income from rail operations in the face of increasing traffic revenue."

(Late in April, the Commission announced revised practice and procedure in abandonment cases—and informed observers regard the revisions as an improvement. Information formerly furnished sometime after filing of an application will now be furnished with the application, and the hope is that this change will save a significant amount of time in the ICC's consideration of a case.)

Santa Fe people concede that, in any abandonment, somebody will be hurt—at least in the context of having to change his present operation. But they also point out that in virtually every case, a branch-line shipper or receiver has alternatives available—and that the alternatives make a lot more sense than, for instance, forcing Santa Fe to maintain a piece of railroad for a few days of grain-harvest traffic a year and precious little on the other 360-or-so days.

If ASTRO's recommendations on light-density-line abandonments could be turned into law, Santa Fe—and all other roads—might be able to move more quickly toward trimming down excess plant. ASTRO concentrates on two proposals: (1) Abandonment should be permitted on any line which fails to meet its avoidable costs; and (2) abandonments applied for should become effective within six months unless the regulatory agency denies the application within that time.

● **What chance for change?** ASTRO concedes that the industry "may properly be criticized for not pursuing abandonment programs with sufficient vigor. At the same time, the criteria of the ICC are so unrealistic and the procedures so protracted that substantial savings are difficult to achieve." The avoidable-cost test, ASTRO says, "makes sound business sense. Railroads have no reason to discontinue a service which they are better off operating. Conversely, unless a railroad's position is improved as a result of a given operation, there is no economic purpose in continuing it."

Does this aspect of ASTRO have a chance? Maybe. Maybe Congress is listening. Earlier in the current session of Congress, Sen. Taft (R.-Ohio) proposed legislation which, among other things, would give railroads the right to tear up unproductive lines. Said the senator: "I don't believe we should require America's railroads to operate branch lines which hold forth no possibility of ever generating a profit, except where the Secretary of Transportation finds a branch line essential to the national or regional economy or the national defense . . . The operation of these unproductive branches simply means lower wages for employees and higher rates for shippers." ■

LUMBER LOADING is receiving the primary emphasis in utilizing HD cars.

"Hello Dolly" cuts unloading time, costs

Nine forest-products shippers lease the cars now.

A box car named "Hello Dolly" is getting the same enthusiastic reception from shippers and dealers of packaged lumber as the Broadway musical's heroine Dolly Levi got when she made her triumphant return. "They can send one of those cars back to me anytime," remarked a pleased John E. Arnold, chairman of the board of Cook County Lumber Co., Chicago. He had just seen one of his two-man crews—using nothing more than a standard forklift truck—unload 47,652 board feet of bundled Number 3 common pine from a Hello Dolly car in just one hour and 15 minutes.

● **Fifty cars—more to come.** No less enthusiastic about the car's capabilities are the nine forest products companies who have them on lease now, and Pullman Transport Leasing Co., the lessor. PTL has 50 HD cars in its growing lease fleet and, according to Hugh Foster, vice president-marketing, "a larger production run may be ordered later this year." The new cars are expected to cost over $25,000 each, and to lease for about $325 a month on a full service basis. Classified "LU," the car receives a mileage allowance of 5½ cents.

Matching—perhaps even exceeding—Arnold's praise of the HD's time- and cost-saving abilities is that of Flake Willis, vice president and general traffic manager, Southwest Forest Industries. "These cars are great, just great," says Willis, whose company, one of the HD's lessees, originated the shipment which the two-man crew at Cook County Lumber unloaded so quickly. "Their carrying capacity is very good and, of course, they're very easy to load and unload."

● **Four permanent dollies.** HD's key feature—and the thing that gives it the catchy name—is a dolly arrangement inside. Four dollies—two at each end—can be rolled into the spacious doorway area for loading and then rolled back and locked automatically out of the way. Once the doorway area is cleared, then it too can be loaded. The dollies, 4½ feet wide and 16 feet long, are permanently attached to tracks in the car deck and cannot be removed. Moving the loaded dollies is easy for a forklift.

With inside measurements of 66½ feet in length, 9 feet, 2 inches in width and 10 feet, 9 inches in height (10 feet over the dollies), HD has a cube of 6,300 feet. Fitted with 100-ton trucks, it is considerably larger than the 50½-foot HD prototype introduced by PTL about five years ago (RA, June 26, 1967, p. 53). It comes with 16 removable door posts, 18 plywood bulkheads and four inflatable dunnage bags. End-of-car cushioning is an option.

Loading and unloading speed of the HD rates just about on a par with that of the all-door box car, another popular vehicle with lumber and lumber products shippers, says Willis, who has had experiences with both types. Willis was one of the first shippers to experiment with the original 50½-foot HD box car.

● **Heavier loadings possible.** Unlike the all-door box car, the HD has sides, which perhaps make it somewhat sturdier. This side strength permits heavier loadings, thus giving the HD greater versatility. The 34½-foot doorway takes up only about one-half the car side. Loading capacity of the 104,000-pound car is 158,000 pounds.

Most of the unitized loads can be loaded or unloaded in about one hour by one man using a forklift. By comparison, says a PTL spokesman, a 40-foot box car load will take a two-man crew about one-and-one-half days to hand unload. This "stick by stick" method, which must be used with about 80% of the box cars in lumber service, costs $90-120 more per load than HD's unloading costs. Another saving of anywhere from $50 to $75 can be made in wrapping costs, compared with flat car shipments.

Although dunnage bags are regarded as standard interior equipment, they don't have to be used to prevent shifting or saw-toothing of lumber loads. In the case of the load of pine shipped to Cook County Lumber, simple wood bracing was used effectively. "An air compressor was not handy to inflate the bags at the time we loaded the car," explains Willis, "so we just used a minimum amount of bracing to hold the load in place."

● **Not confined to lumber.** Lumber and lumber products are not the only things that can be transported economically in the HD car. Recently, Continental Oil Co. made plans for a test shipment of banded pipe in an HD demonstrator. For the time being, though, advises Foster, most of PTL's marketing efforts for the HD car will be concentrated in the forest products industry.

"For various reasons," he explains, "lumber shippers have been restricted largely to the use of general-purpose box cars, including many small units of older vintage, and have shared only to a limited extent in the transition to special-purpose equipment. Our market studies clearly showed the need for greater efficiency in loading and unloading, heavier load capacity, positive weather protection without wrapping, and the lowest car cost consistent with these requirements. Our Dolly car meets these service specifications and offers economic benefits to everyone concerned with lumber shipments, including the railroads." ■

FAG

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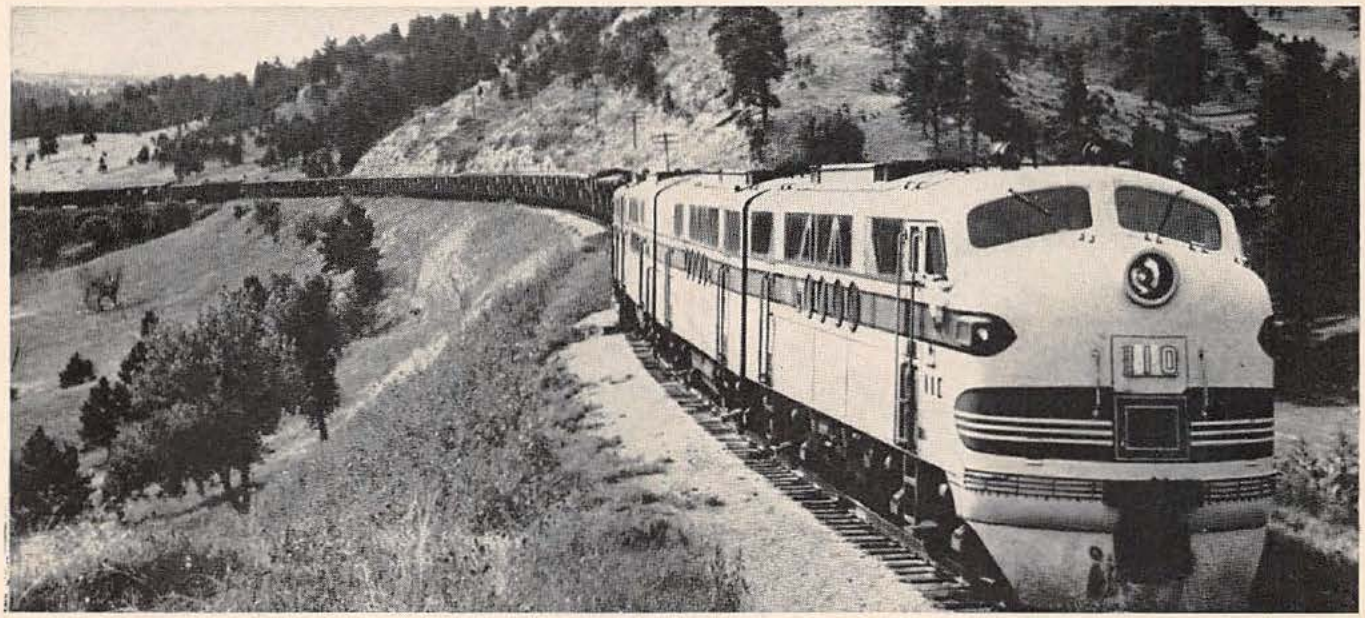
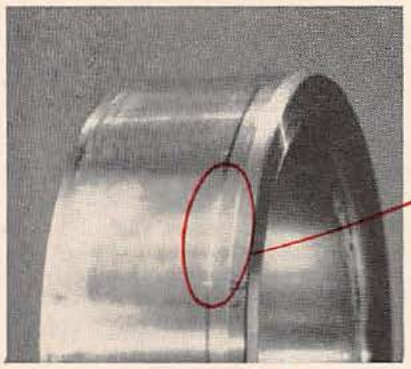
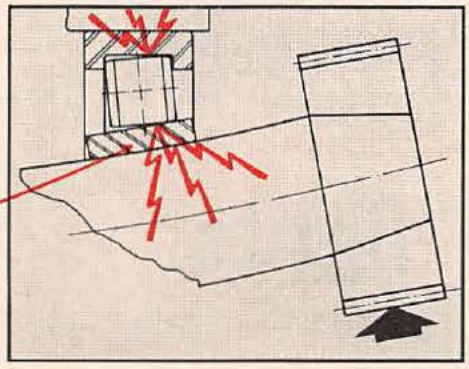




EDGE LOADING TROUBLE TRACK



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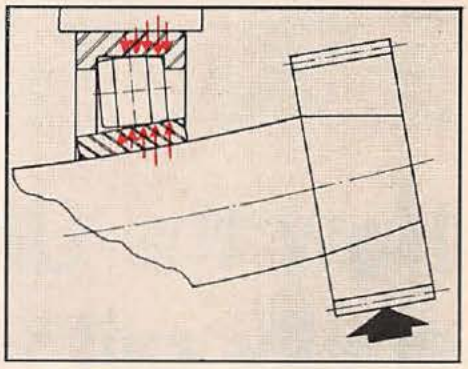

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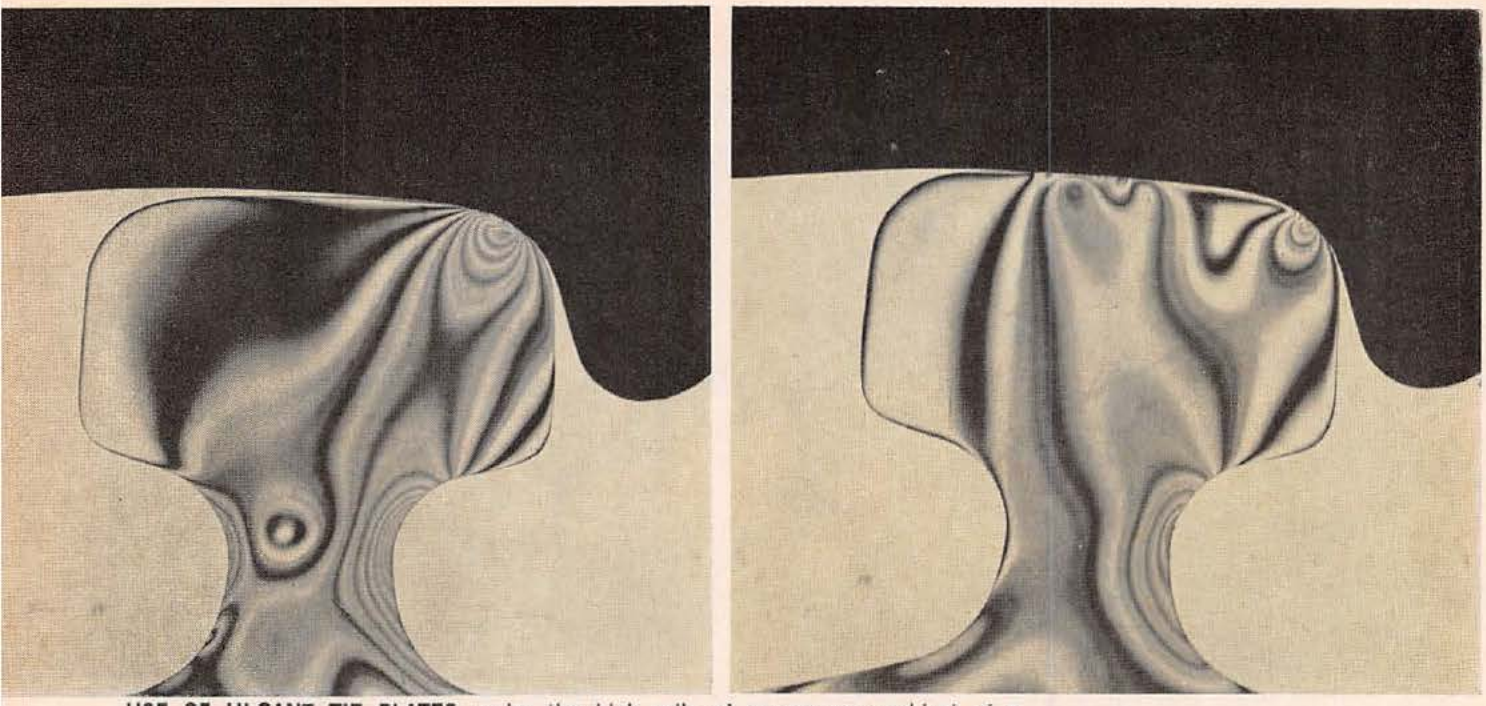


USE OF HI-CANT TIE PLATES under the high rails of curves was subject of a theoretical study in the laboratories of the Denver Research Institute, University of Denver. Stress patterns were determined by subjecting plastic rail models to a load representing a worn wheel tread and then using a polariscope to observe the results. View at the left above shows the stress pattern when the rail was placed at the standard cant of 1 in 40. The pattern at the right, showing the stresses when a cant of 1 in 14 is used, is said to approximate that on tangent track. Hi-Cant tie plates, used in combination with special rail, UP believes, will reduce shelling.

How the UP fights shelly rail with special tie plates

Union Pacific has taken a major step in its efforts to combat the problem of shelly rail, a condition mainly afflicting outer rails on curves. For use under the rails on the high sides of curves of two degrees or more, the road has standardized on the use of tie plates having a higher rate of cant, 1-in-14, than the 1-in-40 cant of conventional tie plates. These special patented tie plates are called Hi-Cant tie plates by the manufacturer, CF&I Steel Corp., which introduced them in 1969 (RA, Feb. 10, 1969, p. 21).

Engineers explain that the shelly condition results from the flow of metal brought about on the gauge sides of rails by heavy loads imposed by wheels. It often results in development of a type of rail failure called the detail fracture.

● **Heavy shelling on UP.** UP's experience with shelly rail is explained by George H. Maxwell, senior staff engineer in the office of R. M. Brown, chief engineer. Heavy shelling has occurred, he says, in less than a year in territory carrying 20 million tons of traffic a year. In one case, in territory carrying 37 million tons a year, the shelling was sufficient to cause development of detail fractures ranging from 25% to 35% of the rail-head area in less than a year. This situation developed on the road's double-track main line west of Green River, Wyo.

In 1969, UP replaced 1,393 rails in main-line territory because of excessive shelling. In the same year, the road replaced 1,652 rails because of detail fractures found by rail-detector cars. A good share of these was caused by shelling.

● **What tests showed.** UP's decision to standardize on the special tie plates was made following observation of curves on which test installations were made. These observations indicate that the Hi-Cant tie plates caused wheel loads to be distributed uniformly across the running surface of the rail rather than to be concentrated at the gauge corner. It is this concentration of loads that causes the shelly condition to develop.

As an example of results obtained, Maxwell cites experience on three curves on which the mill scale was still intact on the gauge sides of the high rails three and one-half to four months after the Hi-Cant tie plates were installed. He adds: "We have had absolutely no wear on the gauge corners of rails in which the Hi-Cant tie plates were installed."

● **Had considered higher cant.** Even before Hi-Cant tie plates were introduced, UP's Brown had been considering the idea of increasing the 1-in-40 tie-plate cant, expecially on curves but also on tangent track. He had come to the conclusion that the 1-in-40 cant was not sufficient for the high speeds and heavy traffic encountered on UP. His theory was that, with the 1-in-40 cant, the heavy wheel loads imposed excessive stresses on the gauge corner of the rails, even on tangent track, resulting in shelly rail.

In view of this reasoning, UP considered trying out the high-cant idea using tapered rubber shims under standard tie plates to obtain the high cant. However, the idea was rejected because it was felt that the presence of the shims un-

(Continued on page 60)

LETTERS

Commuter car prices

Philadelphia, Pa.

To the Editor:

On page 11 of the March 8 Railway Age, you quote a U.S. Department of Transportation spokesman to the effect that Philadelphia's Cadillac commuter cars bids have been rejected in favor of an Oldsmobile. The quotation may be correct, but the assertion is totally unjustified by the circumstances.

The bids in question were at a price of $378,000 per car, which is high enough, but 10% lower than cars of similar characteristics recently approved for the states of New York and Connecticut.

In 1962, the city of Philadelphia took bids on similar cars which came in at $250,000 each. In 1967, another group of cars were purchased at the same price, but the car builder lost about 20% on them as the inflationary cycle accelerated. If you trend these previous prices, you will find the $378,000 bid quite good.

There is nothing that can be done to reduce the price of the cars. Rebidding will increase the cost because of the delay. At 820 pounds per seat, the car is as light as feasible. If the speed or braking rate is reduced, the cars will not be capable of meeting schedules, thus requiring that more cars be purchased, and more train crews to man them. If the cars are cheapened structurally, they will not pass the 800,000-lb compression test, nor will they last the life of the local bonds necessary to match the DOT funding.

It would be much too risky to place a large order of cars with an inexperienced firm that might have the troubles of the Turbo Train, or even the Metroliners. It is not possible to move commuters at rush hours with less than 50% equipment availability.

The commuting public and the railroads should have cause for concern. Your editorial on page 60 senses this.

Professional Engineer

(The writer of the above letter requested that his name be withheld.—Ed.)

Unit trains in 1849

Washington, D. C.

To the Editor:

Innovation, we are taught, is good and necessary. Unit trains and contract rates are examples: they benefit the railroads and the economy generally. But the idea of unit trains is not as innovative as we think; as early as 1849, contracts for the shipment of full trainloads of coal were recommended in England (Philip S. Bagwell, "The Railway Clearinghouse in the British Economy," Augustus M. Kelley, New York, 1969, p. 84).

George B. Dutton, Jr.
R. L. Banks & Associates, Inc.

How Amtrak can help ASTRO

Garland, Texas

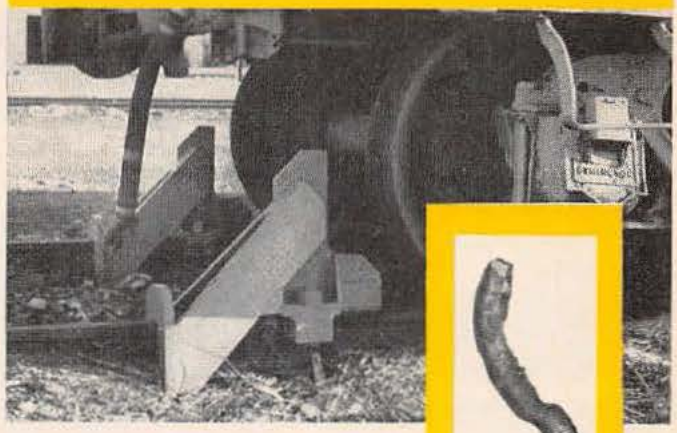
To the Editor:

Railpax, now Amtrak, can be the vehicle for selling ASTRO. Dedicated effort on the part of railroads and their employees toward handling Amtrak's trains and patrons efficiently, courteously and on time will do more than any amount of lobbying or complaining about the present plight.

It is doubtful if a similar opportunity for good public relations will ever present itself again. It is hoped that the railroad companies involved will make the most of this opportunity.

M. D. Monaghan

Absorb center-pin shearing shock with Hayes CUSHION® wheel stops



Center pin damaged by rigid wheel stopping devices.

Every jolting stop caused by a rigid fixed wheel stop causes a shearing action between the truck and car that must be absorbed by the center-pin alone. Eventually the pin must be replaced or the car will be taken off center with possible damage to car, lading, persons or property.

Hayes Cushion® Wheel Stops yield and absorb damaging shock in resilient ballast. Exclusive Hayes two abutment design adds friction braking as impact speed increases.

The Cushion® feature of Hayes Type SF shown above has made it the world's most specified wheel stop. Hayes engineering leadership provides other types to meet exact service requirements.

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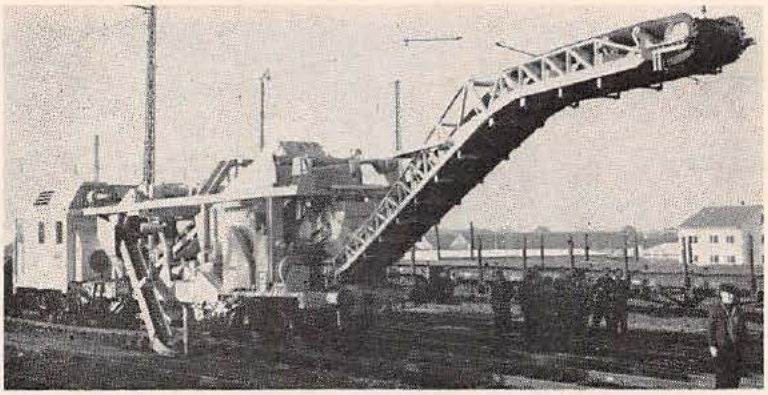

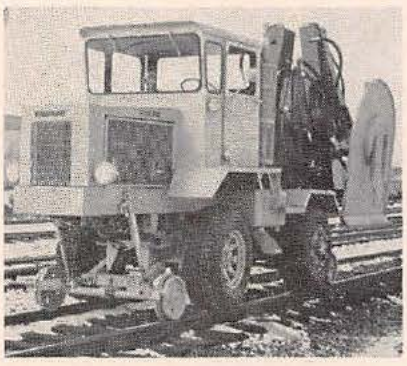

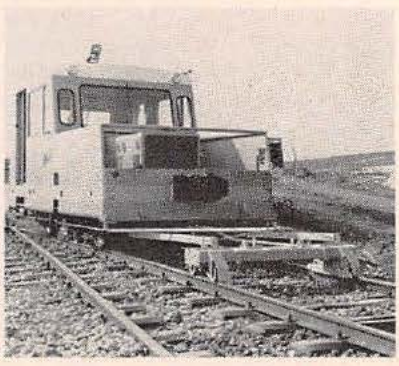

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This successful combination can save investment capital, reduce maintenance costs, eliminate operational headaches, while providing the finest quality work.

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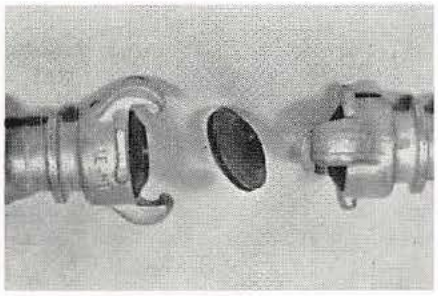
Circle 12 on coupon page 39

New Products Report



Universal gasket (RA-1)

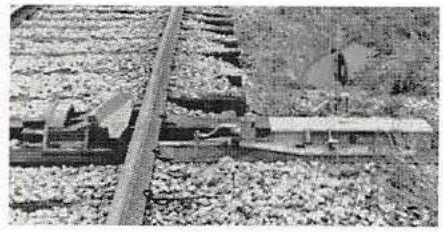
A newly designed universal gasket can be used for any type of air service requiring frequent and fast connections. The new gasket, fully interchangeable in all makes of universal couplings, ensures maximum sealing under high or low pressure. Easy to assemble, it can be reversed in its cavity for double life, when one side is worn or damaged. *Parker Hannifin Corp., Hose Products Division.*

Tank Cleaner (RA-2)

Residue and deposits, ranging from petroleum and chemicals to dry foodstuffs and consumable liquids from industrial product tanks in surface carriers, plants and storage areas, are said to be removed through the use of Gamajet II, a portable automatic tank cleaning machine.

The dimensions of this 250-lb model enable it to pass through a 6-in.-diameter opening. Its 3/8-in. nozzle is said to deliver the same powerful water-jet cleaning action as the larger previous model. Either water or strong chemical compounds can be used as the cleaning agent.

Simplified construction reportedly has reduced the number of moving parts by 40% to permit easy job-site disassembly for routine maintenance. *Gamlen Chemical Co.*



Derail activator (RA-3)

A new device, under the trade name of DeLectric, sets a sliding derail onto the rail to protect persons or property against moving cars. It may be operated manually or automatically from a remote location. Most often, it is activated by a limit switch on a door. When the door is closed, the DeLectric protection is in service. When the door is opened, the derail is removed from the track to permit cars to enter the work area. *Hayes Track Division, Federal Sign & Signal Corp.*

Photologging system (RA-4)

A photologging system recently introduced as an aid to highway engineering studies is also applicable to the needs of railroads. (Photologging is a new method of capturing highway, or other, data on 35-mm. color film for a permanent, accurate record that can be subjected to detailed study and interpretation.) The new system is based on discrete exposures of film at defined mileage intervals, rather than the usual "cine" time-base of 24 frames per second. Road tests with the van- or car-mounted photologging system have provided permanent records of railroad grade crossings, interchanges, intersections, parkways and urban streets. The 35-mm. format provides high image definition and resolution for the analyst. *Flight Research, a Geotel Co.*

Carrier system (RA-5)

By employing pulse code modulation, the 91A carrier system transmits and receives 24 conversations over two pairs of wires in cables between telephone exchanges. The two principal parts of the 91A terminal installation are the channel bank, which does the pulse coding and decoding of voice and

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data signals, and the line terminating assembly, which connects the channel bank to the outside cables that provide PCM links between telephone exchanges. The 91A system also includes repeaters spaced about every mile on the cables to amplify the coded-pulse signals. *Lenkurt Electric Co.*

Temperature alarm (RA-6)

The EN-ROOT temperature alarm system consists of three compact packages. The main package is a rugged, anodized aluminum housing containing a thermistor temperature sensor and all-solid-state electronics control circuitry. This is designed to mount within the refrigerated compartment. The second package, mounted external to the refrigerated space, contains an on-off switch, fuse, terminal block for incoming 12-volt DC power, and a test switch to check for proper system operation. The third package is a warning device mounted external to the refrigerated compartment.

Model 100 is factory adjusted to activate an alarm when the compartment temperature rises above 0^{O}. Model 200 actuates an alarm when the compartment temperature goes below 34^{O}F and when it rises above 45^{O}F. Other models can be factory-adjusted to suit individual customer temperature requirements.

Various warning devices can be controlled directly by the system output. For refrigerator cars, the use of a 12-volt DC revolving warning light is recommended for mounting on the car roof. As an option, the system output can also turn on a transmitter which will trigger a wayside receiver tied in with the railroad hotbox detector lines to indicate an alarm at a remote point. An audible alarm can also be supplied as an option. *Root Engineering, Inc.*

Microwave test set (RA-7)

A portable, easy-to-operate test set is available for detecting the presence of distortion in microwave radio signals. The equipment has been tested and approved by Western Electric for use in Bell System transmission networks, which transmit most of the nation's long-distance communications. The test set consists of equipment occupying only 2.6 cubic feet of space. It can be moved from location-to-location in its own carrying case, is simple to operate because it is highly automated, and is easy to expand and repair because it is constructed in individual modular units.

This new distortion test set performs a minimum of 14 measurements of an entire microwave network or on any of its individual station-to-station hops. The test set is available with or without an oscilloscope. Baseband units featuring three switchable tests and a remote display unit also are available as options.

Although most companies will require test equipment for heterodyne-type microwave links which relay communications over long distances, a smaller test set is available for demodulating microwave links which transmit communications over short distances. Since both sets are modular, they can be expanded. The heterodyne type has been designated the CSM 221/222 and the smaller demodulating version, the CSM 223/224. *GT&E International.*

NEW LITERATURE

COMPOSITION SHOES. The Railroad Products Group of Abex Corp. has published a folder illustrating its line of high-friction composition shoes for railroads. Information is also provided on pallet quantity, brake head wheel diameter, length and thickness of shoe and type of application. (NL-1)

LIGHTING. Railroad lighting products and company capabilities are featured in an 8-page, illustrated brochure by EWC, Inc. The brochure highlights, among other things, Electro product line of transformers, 1-c filters, inductors and power supplies. (NL-2)

WASTE CONTAINERS. A new catalog from the American Solid Waste Systems Division of American Hoist & Derrick Co. introduces a newly designed RAM-PAK carrier for roll-on, roll-off solid containers. (NL-3)

INDUSTRIAL TRUCKS. A 24-page catalog on narrow aisle electric industrial trucks has been published by the Raymond Corp. The catalog, illustrated with on-the-job application photos, describes Raymond's complete line of powered equipment. (NL-4)

IN-TRANSIT DISTRIBUTION. A 4-page, color-illustrated brochure from Federal Compress & Warehouse Co. describes the profit possibilities of in-transit distribution. (NL-5)

FLOOR SCALES. Bulletin 7004 from Howe Richardson Scale Co. describes the company's Durasteel Built-in Floor Scales, featuring a 10-year warranty. Capacities of the scales range from 5 to 15 tons; platform sizes from 6 x 5 ft to 10 x 10 ft. (NL-6)

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We've just built a low-priced FDM data transmission system that's the best value on the market: the GTE Lenkurt model 25C. Go inside and take a look around . . . you'll find intermixable speeds from 110 to 600 baud. You'll find a built-in 20 mA local telegraph interface for on-premises printer applications. You'll find local/remote test features and a built-in carrier alarm lamp. You'll find it meets TTL, S-level and EIA/CCITT interface standards. And you'll find all the quality and precision we've been known for during 25 years of building data transmission systems.

The 25C comes as an attractive single-channel subset. Or the same duplex channel unit can be shelf mounted — up to 8 channels per shelf with a maximum of 18 channels (110 baud) on each VF line. So it lets you use just one voice channel rather than a lot of data lines. And it lets you do it at a very reasonable price. Add to that the 25C's economy of maintenance and you end up with a bundle of savings.

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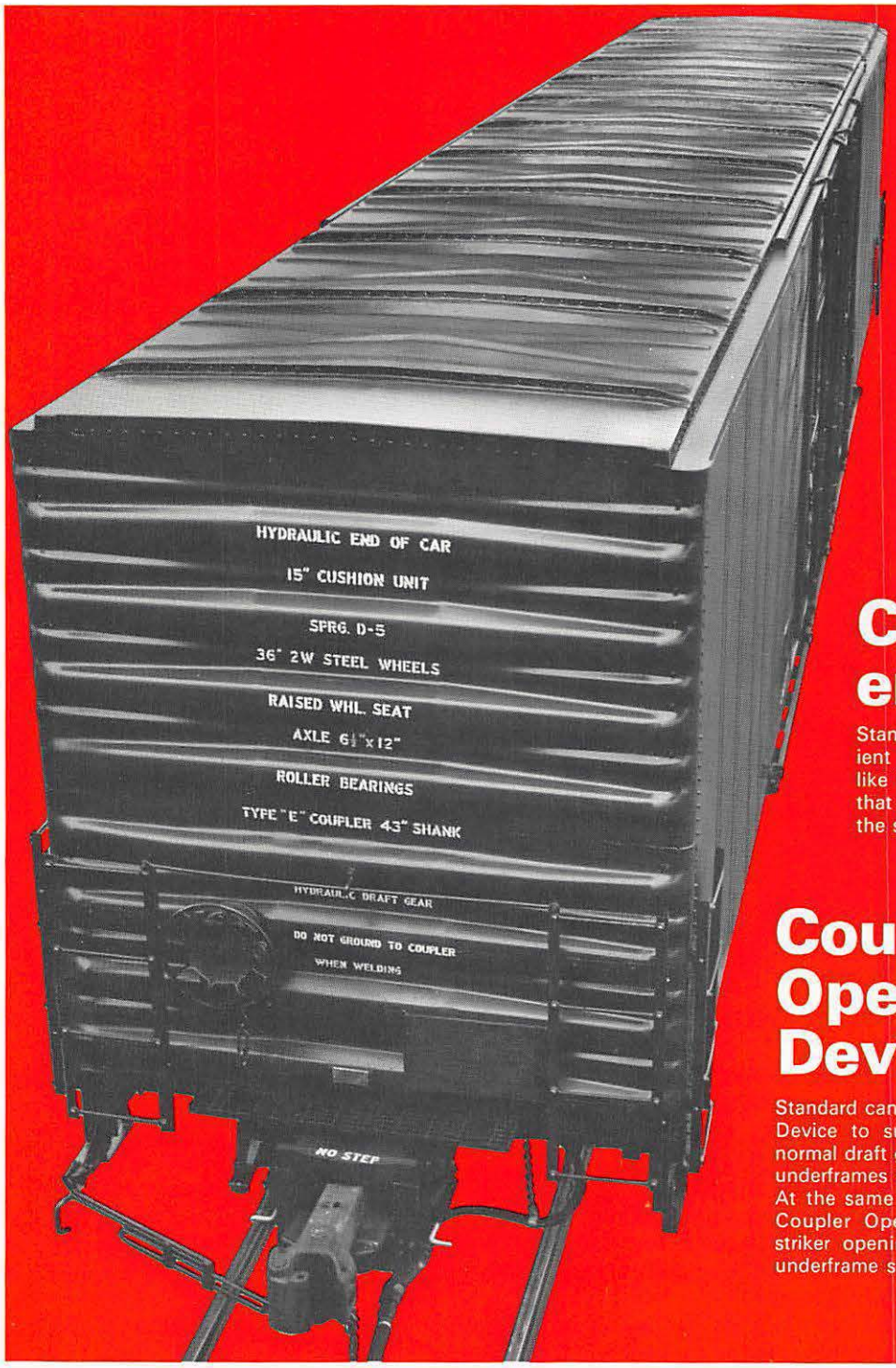
Put Stanray components where the stress is, and lengthen box car life



X-Panel roof

Two of the greatest stresses a box car roof is subject to is twisting and racking. The X-panel roof is designed to provide maximum resistance to these stresses at minimum cost. Standard's new roof has panels 61½" wide instead of the normal 41", which result in approximately 33% fewer seam caps. It also means less chance of leakage.

Corrugated ends

Standard's Corrugated Ends have a resilient construction that produces spring-like action under impact, and a strength that is greater than other designs using the same thickness of metal.

Coupler Operating Devices

Standard can furnish a Coupler Operating Device to suit any coupler travel from normal draft gear conditions to cushioned underframes with as much as 60" travel. At the same time, Standard furnishes a Coupler Operating Device to suit any striker opening required for the custom underframe specified.

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BOOKSHELF

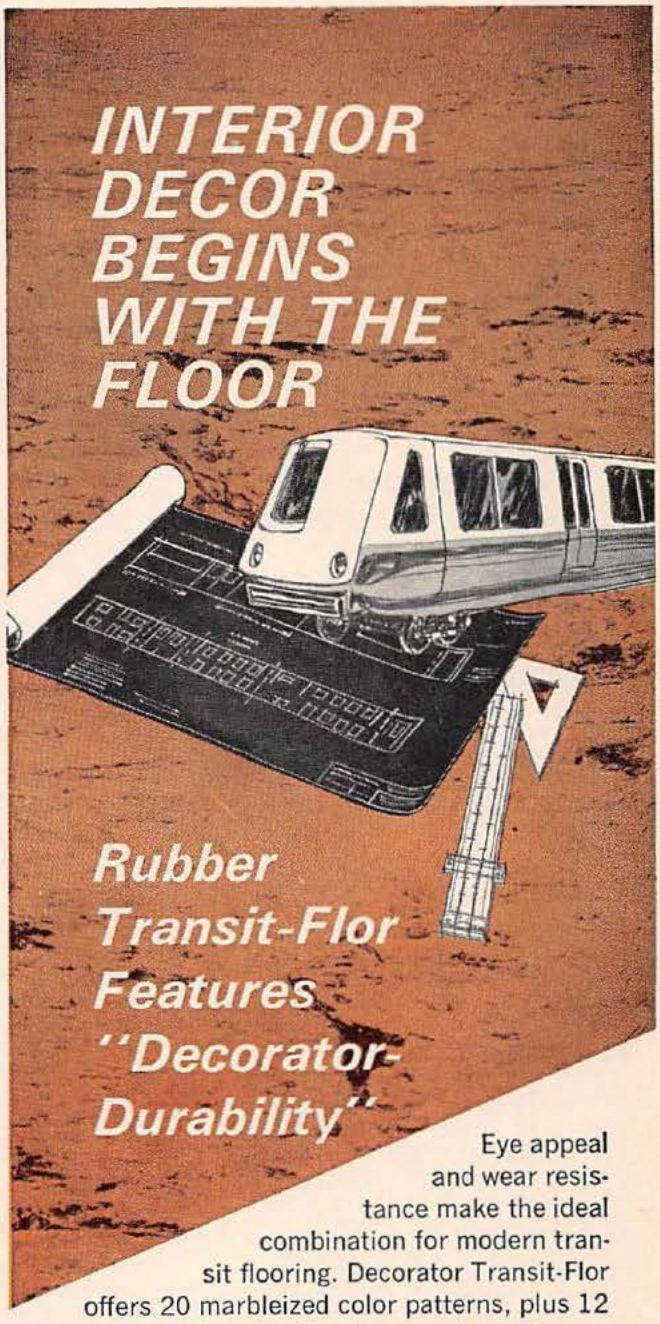
JANE'S WORLD RAILWAYS 1970-1971. "The railway industry is a growth industry" proclaims the foreword to this 13th edition of what surely must be the most comprehensive survey of railroad and railroad-related activity throughout the globe. The proclamation is buttressed by a wealth of pertinent argument and analysis. "For the last 20 years or more," the foreword continues, "the railways' proportion of the steadily expanding traffic demand has been falling year by year. But there are indications that the tide is beginning to turn. Certainly the railway industry as a whole is gearing itself to absorb an increasing share of the future total. The application of technological advances—to fixed and moving equipment, to the provision of greater passenger comfort and convenience, to improved methods of freight handling and movement, to higher operating speeds, to data collection and accessibility—allied to forward looking and sales-oriented management is fast expanding the railway potential for rapid and safe transportation in all weathers."

Rapid transit is another basic element in Jane's appraisal of railways as a growth industry. It is a field of operation "in which the railway appears to reign supreme," the foreword says. "Rail rapid transit systems, whether below the surface, on the surface, or elevated, are now accepted (reluctantly in some instances) as being the only adequate solution to the moving of large numbers of passengers between the centers of cities and the surrounding areas. Sixteen years ago the 1954-55 edition of this work gave details of ten underground railway systems in operation. The present edition describes rapid transit systems in operation or under construction in 60 cities around the world, and lists a further 20 cities which are considering their requirements in this field." *686 pages; McGraw-Hill Book Co., 330 W. 42nd St., New York, N.Y. 10036; price: $49.50.*

CONTAINERISATION INTERNATIONAL YEAR BOOK 1971 is, as its title page says, "a compendium of container facts, published for the professional traffic manager, freight forwarder and transportation consultant." It is "designed also to serve as an efficient, up-to-date guide for exporters and importers everywhere."

The year book introduces three important departures from conventional transport publishing. First, a comprehensive geographical section for the container user which give at-a-glance information about inland and port terminals around the world. In tabulated form this section lists land and sea operators serving a terminal; the number of container gantries; maximum length of containers that can be handled; numbers of containers already handled each year; quantities of general cargo handled annually; and leasing companies serving the terminal.

Secondly, a series of in-depth studies deal with a single aspect of the container industry: the changing ways of shipment costing; bulk shipment by container, and problems of registration and identification. Finally, the year book carries a cross-reference index section indicating outside information sources, including relevant official publications covering the widest range of subjects in the fast-growing containerization industry. *280 pages; available from Book Distribution Manager, Containerisation International, 22 Armoury Way, London, S.W. 18, England; price: $10.*



Eye appeal and wear resistance make the ideal combination for modern transit flooring. Decorator Transit-Flor offers 20 marbleized color patterns, plus 12 terrazzo styles, to blend or contrast in new or existing interiors. Low-maintenance rubber stands up to grueling wear, foul weather . . . and even supplies best resistance to cigarette scorch. Rubber's natural resilience provides underfoot safety . . . in double-grooved rib or smooth surface flooring. Step treads come in blending or matching colors.

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Fifth International Conference on Urban Transportation

PITTSBURGH, PENNSYLVANIA
SEPTEMBER 8, 9, 10, 1971

MOBILITY— THE FIFTH FREEDOM?

Pittsburgh, the international center of transit technology, will proudly host the Fifth International Conference on Urban Transportation—the most exciting ever held!

The theme of the conference is mobility, the effective intermesh of all means of transportation—a vital bulwark of personal freedom. Each year we witness the spreading paralysis of human movement in this world. Even the task of travelling across town is almost impossible.

The conference will bring together leading international authorities in transportation, government, industry, education and science who will bring with them both critical challenges and far-reaching answers. The emphasis is no longer on problem awareness; it is now on problem solving.

We believe that the Fifth International Conference on Urban Transportation will be the most exciting and informative ever held.

Arthur V. Harris
Conference Chairman

Pittsburgh Urban Transit Council
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People in the News

AKRON, CANTON & YOUNGSTOWN.—A. W. Hochberg appointed assistant general manager, Akron, Ohio.

ASSOCIATION OF AMERICAN RAILROADS.—Dr. Isadore Kaplan, director of medical services, **Chesapeake & Ohio-Baltimore & Ohio,** elected chairman, medical section, AAR, for 1971-1972.

BALTIMORE & OHIO.—George B. Bull, Jr., trailer service traffic representative, appointed regional sales manager—trailer service, Baltimore, succeeding **Robert L. Caldwell,** retired.

Mrs. Marian E. Smith appointed supervisor, Baltimore & Ohio Transportation Museum, which houses the largest collection in the world of historic rail equipment. Mrs. Smith has been associated with the public relations department, which supervises operation of the museum, since 1961.

BURLINGTON NORTHERN.—Robert S. Macfarlane, chairman emeritus and director, retires May 13 after 37 years of railroad service.

R. G. Johnson, assistant vice president, operations, Chicago region, Chicago, named assistant vice president, transportation, St. Paul. **J. E. Hamer,** assistant vice president, operations, Omaha region, Omaha, succeeds Mr. Johnson, and in turn is replaced by **W. S. Johnston,** operations manager, Omaha region. Mr. Johnston's successor is **C. W. Thompson,** general superintendent, transportation, St. Paul. **H. E. Pierce** succeeds Mr. Thompson.

H. D. Lear, assistant vice president, merger development, appointed assistant vice president, executive department.

R. Paul Tjossem, regional counsel, named assistant vice president-regional counsel, Seattle. **George A. Morrison** appointed assistant general counsel-taxes, and **William R. Power,** attorney, both with headquarters in St. Paul.

In the labor relations department, **C. M. Illg** named assistant vice president; **E. F. Oviatt** and **P. A. Nemcek,** assistants to vice president; **L. K. Hall** and **S. W. Holliday,** directors-labor relations; **J. D. Dawson, H. C. Loucks** and **W. C. Sheak,** managers-labor relations. All will have headquarters at St. Paul.

William A. Thompson named assistant superintendent, Aurora, Ill. **Lowell D. Sims** named assistant superintendent, Ottumwa, Iowa.

Donald F. Merrill named regional manager-engineering; **Jerrold G. Wood,** regional engineer; **Roy V. Brawner,** regional engineer-maintenance, all with headquarters in Chicago.

CANADIAN NATIONAL.—Harold Rousseau, superintendent of transportation, Hudson Bay Area, Dauphin, Man., appointed assistant general superintendent of transportation, Atlantic Region, Moncton, N. B.

R. James Hartrick named piggyback manager Western Canada Vancouver B. C.

Robert A. Bandeen, vice president-corporate planning and finance, Montreal, named vice president, Great Lakes Region, Toronto, succeeding **Douglas V. Gonder,** retired.

CANADIAN PACIFIC.—J. K. Dakin appointed director personnel planning, Montreal.

CHESAPEAKE & OHIO—BALTIMORE & OHIO.—John W. Hanifin, assistant general counsel, Cleveland, elected vice president—executive department. **Kenneth T. Reed,** assistant vice president—maintenance, promoted to vice president—operations and maintenance, succeeding **C. Vernon Cowan,** elected senior vice president (RA, April 26, pp. 48, 50). **John T. Ford, Jr.,** assistant vice president for finance, elected vice president for finance. **George A. Sandmann,** assistant vice president for coal commercial planning, elected vice president coal traffic, a position which had been vacant.

N. P. Waldoch, district sales manager, C&O, Milwaukee, Wis., retired May 1, after more than 44 years of service.

Erle T. Rucker, assistant vice president-transportation, Baltimore, named assistant vice president-operations planning there. **Richard G. Rayburn,** general manager-transportation, succeeds Mr. Rucker. **Roger F. Brown,** assistant vice president, finance department, named assistant to the president, Cleveland.

CHICAGO & NORTH WESTERN.—Walter M. Conard, Jr., assistant manager-commerce, named manager-commerce. Mr. Conard's successor is **Robert J. DiFatta,** assistant manager—rates.

George R. Charles, assistant to the treasurer, named assistant treasurer.

Ronald W. Guelzow, assistant market manager, named market manager—food products.

William R. Swails named rates manager grain. Mr. Swails was formerly traffic manager, **General Electric Co.,** Chicago Heights, Ill.

R. E. Snyder named division engineer, Missouri division, Oelwein, Iowa.

COLORADO & WYOMING.—Robert J. Slater elected president, with headquarters in Pueblo, Colo. He was formerly general superintendent—transportation, Eastern Region, **Penn Central,** Philadelphia.

DEPARTMENT OF TRANSPORTATION.—William F. Callicotte appointed regional director, Region 8, **Federal Railroad Administration,** at Kansas City, Mo. Mr. Callicotte was formerly field supervisor for the region.

ILLINOIS CENTRAL.—Howard D. Koontz, John D. Morrison and **William J. O'Brien, Jr.,** assistant general soliciters, named general solicitors.

Rosamond T. Jenkins, manager administration, Traffic Department, appointed director management services.

JERSEY CENTRAL.—Gordon R. Fuller appointed general superintendent, Newark, N.J. Mr. Fuller was formerly transportation superintendent, **Penn Central,** Buffalo.

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- Diaphragms & Car Closures
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MEMBER RPI

Circle 22 on coupon page 39

LOUISVILLE & NASHVILLE.—James W. Hoeland, general solicitor, elected vice president-marketing, to succeed **Phil E. Geil,** who retired Apr'l 30. **W. G. Whitsett,** senior vice president, also retired April 30.

David C. Yearwood and **Robert C. Moore,** attorneys, named assistant general attorneys, Louisville.

David L. Roth, industrial engineer, appointed manager unit train operations, Louisville.

R. L. Agee, master mechanic, Latonia, Ky., named superintendent of the newly created Knoxville division, with headquarters at Knoxville, Tenn. The new division is a consolidation of the Cumberland Valley and Knoxville and Atlanta divisions which follower retirement of the two superintendents, **C. W. Watson,** Corbin, Ky., and **J. N. Neal,** Knoxville.

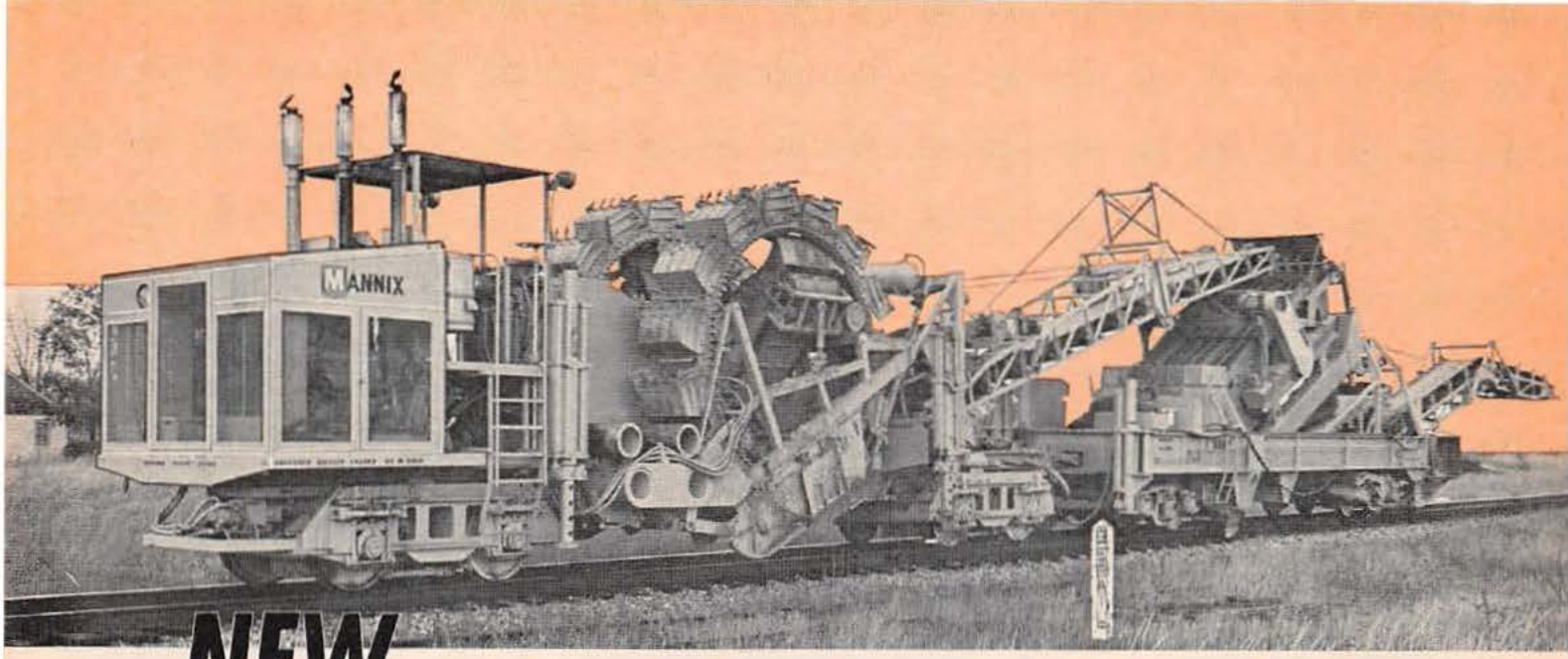
MILWAUKEE. — Stephen F. Lupe named to the newly created position of d'rector of sales analysis and planning, Chicago. **James L. Phleger,** district manager of sales, Milwaukee, appointed regional manager of sales there, succeeding **J. Harold Mitcham,** transferred to Portland, Ore. Mr. Phleger's successor is **William R. Bickley,** district manager of sales, Davenport, Iowa.

MISSOURI PACIFIC-TEXAS & PACIFIC.—B. J. Cranford, superintendent, Illinois division, MP and M'ssouri-Illinois Railroad, Chester, Ill., named superintendent, Red River division, T&P, Longview, Tex., succeeding **Daniel C. Conway,** promoted (RA, April 12, p. 48). Mr. Cranford's successor is **H. W. Ritter,** transferred from the Rio Grande division, T&P, Big Spring, Tex. **C. E. Dettmann,** trainmaster, T&P, Longv'ew, succeeds Mr. Ritter, and in turn is succeeded by **R. G. Lang,** transferred from the MP, Poplar Bluff, Mo. **K. C. Packard** succeeds Mr. Lang. **J. W. Brugioni, Jr.,** trainmaster, MP, Little Rock, Ark., advanced to assistant superintendent, MP, Kansas City, Mo., to succeed **J. H. Mellon,** resigned. Mr. Brugioni's successor is **W. T. Ray,** trainmaster, MP, Wichita, Kans., who in turn is replaced by **R. L. McCoy,** transferred from Coffeyville, Kans. **C. C. Reeves** replaces Mr. McCoy. **A. J. Darington,** trainmaster, MP, Memphis, transferred to the T&P, Fort Worth. **M. R. Deatherage** succeeds Mr. Darington. **G. C. Smith,** assistant to superintendent transportat'on, MP-T&P, Houston, named trainmaster, MP, Houston. **M. H. Cunningham,** chief dispatcher, Kingsville and DeQuincy divisions, MP, Houston, succeeds Mr. Smith.

James W. McCoy, general agent, Oklahoma City, Okla., transferred to Tulsa. Mr. McCoy's successor is **R. J. Sheffield,** traffic representative, Fort Worth, Tex.

MISSOURI PACIFIC.—David F. Vahlkamp named assistant manager-industrial engineering.

NATIONAL TRANSPORTATION SAFETY BOARD.—Richard L. Spears appointed to the new position of general manager, which replaced the position of executive director. **Ernest Weiss,** formerly executive director, named program review officer, office of the chairman.



NEW Self Propelled, SHOULDER BALLAST CLEANER

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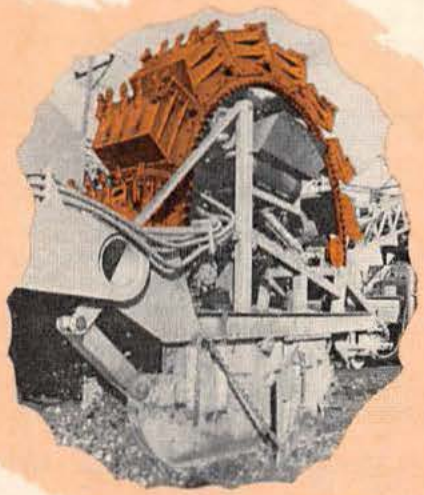
does the whole job in one pass with only a 3 man crew

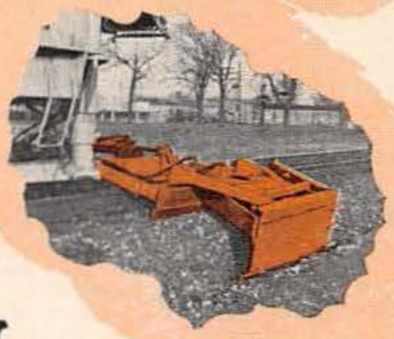
This completely self contained machine travels to and from the job at up to 25 m.p.h., works at up to 1 m.p.h. Removes shoulder ballast to desired depth, thoroughly cleans and redistributes it and deposits waste to either side or into towed car. Breaks up pockets under tie ends with scarifier teeth. Regulates ballast and leaves track ready for immediate, unrestricted use.
You can complete your shoulder ballast cleaning program faster, at less cost, with the MANNIX Shoulder Ballast Cleaner.



Two ditching wheels, separately controlled, will dig to depth before machine moves, lift and retract in seconds to clear obstructions.

Big, double decked and stepped, vibrating screens are adjustable for angle and level for best possible cleaning of ballast.

Regulators shape shoulders to any angle. Also has plow to regulate ballast when deposited between rails.



Chutes distribute cleaned ballast to shoulders and crib in any combination and amount. Shut off when passing crossings, etc.

MEMBER RPI

For complete details, descriptive literature or a showing of 16mm. operating film, write, wire or phone (612) 545-0411. Cable address: MANNIX.

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MAINTENANCE of WAY DIVISION
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Freight and Passenger Car Charts

These charts are very helpful to AAR billing clerks, mechanical engineers, purchasing and stores personnel, car inspectors, write-up men, car foremen, and anyone else who needs a knowledge of car parts and their relation to each other.

The charts include a cutaway diagram of the car and a listing of important parts with arrows showing where the part is located. These charts are used in our apprentice technical training program for the carman craft.

$2 each

If you are not satisfied

YOUR MONEY WILL BE REFUNDED

if you return the charts to us within 30 days

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Please send the charts I have checked below. If I am not satisfied I will return the charts within 30 days for a full refund. I enclose a check or money order for $2.00 for each chart.

- ☐ Gondola Car, Modern design (23x27 inches)
- ☐ Mechanical Refrigerator Car, Modern design (18x22 inches)
- ☐ Box Car, AAR Standard 40 ft. (23-29 inches)
- ☐ Covered Hopper Car (22x30 inches)
- ☐ Tank Car, I.C.C. 103-W. (23x35 inches)
- ☐ Passenger Car, Light-weight, streamlined (14x22 inches)
- ☐ Passenger Car, Air conditioned, chair (18x35 inches)

Name .....
Address .....
City ..... State .....
Job ..... RR.....

NORFOLK & WESTERN.—Alvin Johnson, assistant director—engineering services, Cleveland, appointed assistant general coal traffic manager—sales and service there. **C. Stuart McGee,** coal and ore traffic representative, Cleveland, transferred to Winston-Salem, N. C. **Michael B. Grim,** coal and ore traffic representative, Beckley, W. Va., transferred to Detroit, Mich., and has been succeeded at Beckley by **Roy V. Creasy.**

F. Porter Blackard, district sales manager, promoted to assistant to vice president, with headquarters as before at Washington, D.C.

NORFOLK SOUTHERN.—M. L. Butterton, freight traffic manager—sales, Raleigh, N.C., appointed general traffic manager—sales, and his former position abolished. **E. W. Hatch,** general freight agent—rates, appointed general traffic manager—rates. **I. M. Lee,** assistant general freight agent—rates, promoted to freight traffic manager—rates, succeeding **C. F. M. Morris, Jr.,** who retired April 30, after 50 years with the NS. **L. V. Dexter,** assistant to freight traffic manager, succeeds Mr. Hatch. **J. A. Harrell, Jr.,** assistant to general freight agent—rates, promoted to succeed Mr. Lee.

PENN CENTRAL.—Robert E. VanWagoner has been named metropolitan news manager, public relations department, New York.

Frank S. King, general manager, Philadelphia Commuter Area, appointed system general manager—passenger operation, assuming the former duties of **A. M. Schofield. J. Grant Robins,** assistant general manager, Eastern Region, succeeds Mr. King.

John J. Maher, vice president—labor relations, appointed vice president—administration, with responsibility for both labor relations and personnel development. **Ferdinand L. Kattau,** vice president—personnel, has requested retirement, after a 46-year railroad career. His position will not be filled.

Paul W. Olson named director—market planning and research, succeeding **Thomas B. Graves, Jr.** (RA, April 12, p. 50). **R. Thomas Schoonmaker,** manager market development—construction, succeeds Mr. Olson as assistant director—market planning.

Dr. Robert J. Freedy, division medical officer, Columbus, Ohio, appointed director—medical services, Philadelphia, succeeding **Dr. Stanley J. Cyran,** resigned.

The PC consolidated its Williamsport and Allegheny Divisions at Altoona, Pa., on March 15. **Kenneth F. Webel,** division superintendent, Altoona, continues in charge of the enlarged Allegheny Division. **Theodore E. Jordan,** division superintendent, Williamsport, transferred to the Valley Division at Youngstown, Ohio. **Marvin J. Rodwick,** assistant superintendent—operations, Pittsburgh, named assistant superintendent, Williamsport.

ROCK ISLAND.—Richard Watt named regional manager—pricing, and **R. Joe Barlow,** assistant regional manager—pricing, both with headquarters in Houston. **Bernard M. Schwartz,** regional manager—freight sales, Missouri-Kansas region, Kansas City, Mo., transferred to San Francisco, to succeed **Claire N. Packard,** retired. Mr. Schwartz' successor is **William E. Jones, Jr.,** administrative assistant, sales office, Chicago.

SEABOARD COAST LINE.—Kemper K. Hyers, general claims attorney, named assistant vice president in charge of legislative and related public affairs, with headquarters as before at Richmond, Va.

Thomas B. Renfrow, superintendent of terminals, Savannah, appointed terminal superintendent, Jacksonville.

SOUTHERN.—James C. Cook has been appointed industrial properties manager, Atlanta. The new position was created to improve utilization of existing industrial lands and buildings, and to provide liaison with city and state agencies, chambers of commerce, banks, industrial realtors, in developing industry in Southern-served territory.

Robert E.L. deButts, assistant vice president,-finance appointed general solicitor, remaining in Washington, D.C.

SOUTHERN PACIFIC.—John B. Reid, senior vice president, retired March 31.

Henry A. Purdy, manager of commissary operations, West Oakland, Calif., retired Apr. 30 after more than 42 years' service.

TRAILER TRAIN.—John D. Wightman, vice president and general manager, Philadelphia, appointed to the new position of senior vice president. **Richard E. Shelgren** joins Trailer Train as director-management information systems, succeeding **Harold W. Meluski,** named assistant to the president-computer systems. Mr. Shelgren was formerly a vice president, Computer Data Systems International, ltd. and also served as director of information processing for the **Association of American Railroads. Robert E. Zimmerman,** assistant treasurer, appointed assistant treasurer and assistant secretary. **Henry V. Logan,** director-corporate accounting and taxes, promoted to comptroller. **John H. Craemer** named to the newly created post of assistant to vice president and treasurer. **Francis A. Quinto** promoted to manager, purchasing.

UNION PACIFIC.—Harry G. Bartlett, general traffic agent, Pasadena, Calif., transferred to Anchorage, Alas.

WESTERN PACIFIC.—Kenneth V. Plummer, Jr., general superintendent—transportation, Sacramento, Calif., appointed director—customer services, San Francisco.

Robert C. Marquis appointed general superintendent of transportation, Sacramento, Calif. He was formerly general manager—transportation, **Penn Central,** Philadelphia.

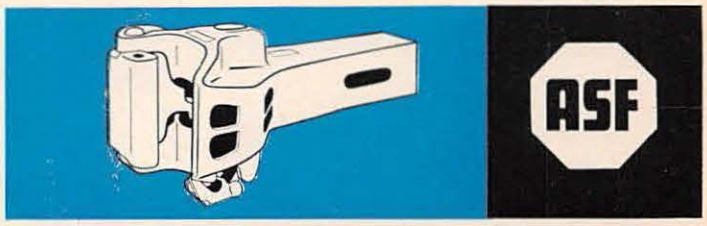
William J. Day appointed director—management services, San Francisco. He was formerly marketing manager, **Martin Marietta Corp.,** Denver.

OBITUARY

Joseph P. Muelleman, retired engineer of tests, **Rock Island,** died Apr. 30 in Central Du Page Hospital, Winfield, Ill.

A Birthday Party for "WEARPACT E" Couplers!

Do you recall when ASF's spectacular gorilla ad introduced "WEARPACT" Special Alloy Steel to our Grade E Coupler family? Well, since then, these couplers have made an outstanding record in slam-bang, everyday, all-weather service, all over the United States. Thanks to all our customers who have helped make this birthday a happy one!



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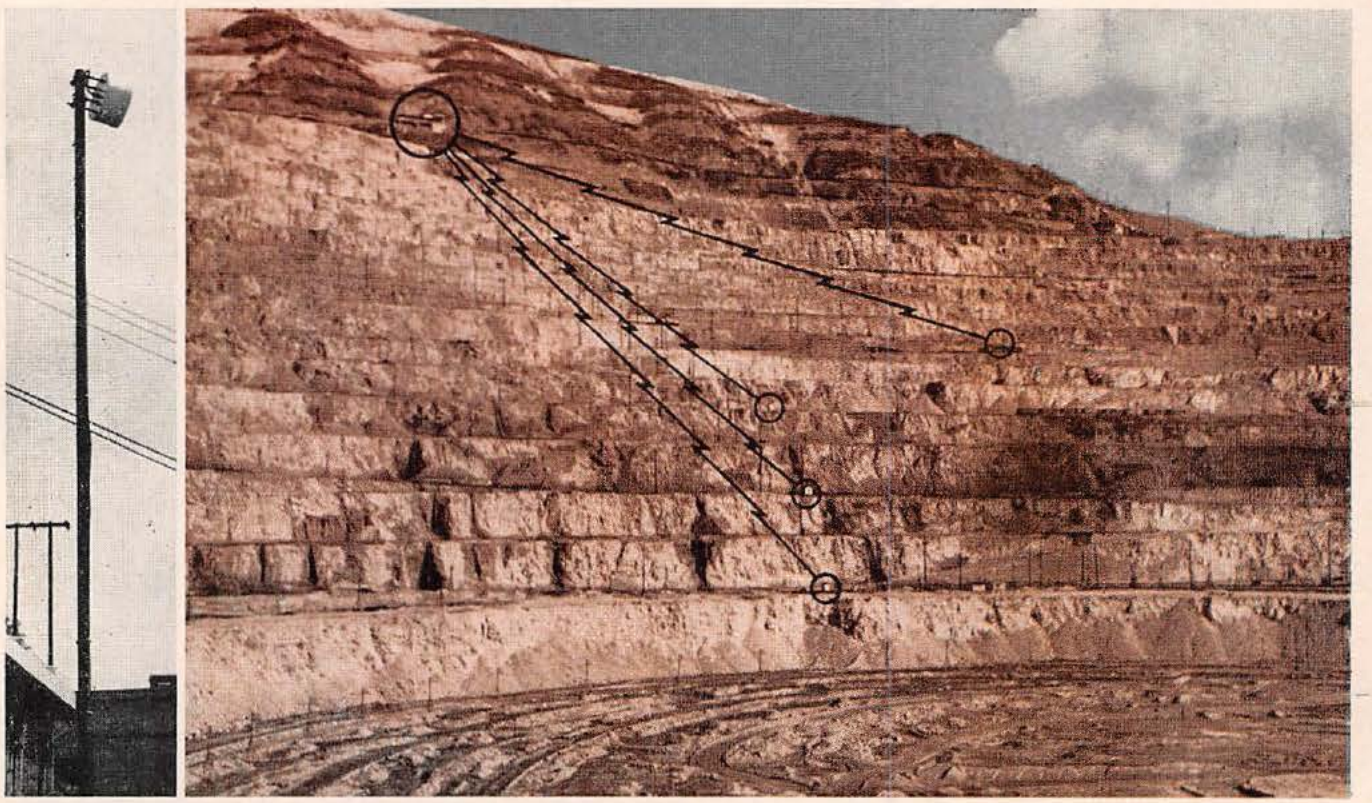
Circle 24 on coupon page 39

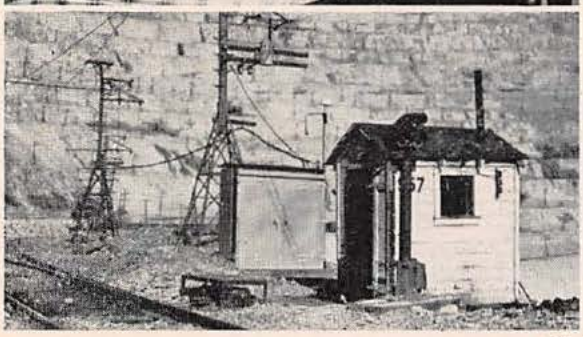
GRS RADIO CONTROL ROUTES ORE TRAINS



This antenna atop the command center beams controls down into the pit — and receives report-back indications from the 34 switching locations.

A radio linked command center at the edge of Kennecott Copper Corporation's mammoth Bingham Canyon mine directs moves of the many busy ore trains in this huge pit — nearly a quarter of a mile deep and two miles across.

Two pit dispatchers, each at a control console, line up routes to expedite ore train movements. Console panels are made up of modular units. They are rearranged as track layouts change with continuing excavation.



This is a typical switching location, with high-speed electric switch machine, signals, and equipment case with antenna. Armor plates protect the switch machine and case from blast debris. (The shack was used when switches had to be tended manually.)

GRS offers many cost-cutting innovations for mine rail operations, including employee-operated radio control of locomotives, car sorting systems, and fully automated railway systems.

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A UNIT OF GENERAL SIGNAL CORPORATION
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3516
ATLANTA BOSTON CHICAGO MONTREAL NEW YORK OAKLAND ST LOUIS ST PAUL

Circle 25 on coupon page 39

CALENDAR

An **International Mineral Transport Symposium** will be held in Vancouver, B.C. Oct. 20-23.

Present and prospective role of computers in solving transportation industry management problems will be examined at the **Joint Computer Conference,** May 18-20, in Atlantic City, N.J.

The fifth **International Conference on Urban Transportation** will be held Sept. 8-10 in the Pittsburgh Hilton, Pittsburgh, Pa.

The **Institute for Rapid Transit** will hold a legislative conference May 18 in the Sheraton Room of the Sheraton-Carlton Hotel, Washington, D.C.

The **Railway Systems and Management Association** is holding a Railroad Freight Traffic Workshop June 3-4 in Chicago.

"Emerging Transportation Technologies and Issues" is the theme of the **National Transportation Engineering Meeting** to be held July 26-30 in Seattle, Wash. The meeting is co-sponsored by the American Society of Civil Engineers and the American Society of Mechanical Engineers.

"Comparative Domestic Transportation Systems in Major Foreign Industrial Nations" is the subject of a one-day business seminar to be conducted in New York May 25 under auspices of the **Commerce and Industry Association of New York.**

The 54th anniversary convention of the **National Coal Association** will be held in the Mayflower Hotel, Washington, D.C., June 13-15.

The 1971 **National Material Handling Show** will be held May 17-20 at the Philadelphia (Pa.) Civic Center.

The 4th **International Shipping & Containerization Exposition** will be held in the Oakland Coliseum, Oakland, Calif., Sept. 13-16, 1971. As in previous years, the exposition will have an international roster of exhibitors and visitors.

The 42nd annual meeting of the AAR's **Mechanical Division** will be held in the Sheraton-Chicago, June 22-24. On June 23, the **Railway Supply Association** will sponsor a ladies' luncheon (noon), a reception (6 p.m.), and a banquet (7 p.m.). The **Coordinated Associations** will meet in the Sherman House, Chicago, Sept. 12-15. No exhibits are planned. The meeting rooms will be as follows: **Air Brake Association**—Crystal Room; **Car Department Officers' Association**—Louis XVI Room; **Locomotive Maintenance Officers' Association**—Grand Ballroom; **Railway Fuel & Operating Officers' Association**—Assembly Room.

Here's the story of photologging . . . a new technology . . . and some of its potential benefits to railroaders.

We call this new system the Road-O-Graph(TM). With it, the maintenance-conscious railroader can save time and money. By improving M/W procedure — because it's now possible to analyze conditions in yards, pinpoint rough track, damaged structures or crossing hazards.

Survey bridges, ditches, ballast, tunnel entrances, interlocking plants.

The system can be mounted on a locomotive, a rail test car, a caboose or an executive car.

Know exactly where each exposure is recorded. The data chamber records mileage, direction traveled, date, location, lens used, shutter speed — along with variable information entered on a "data slate."

Flight Research has been designing and building precision cameras for years — sent them into the field for surveillance, event recording, time/motion studies, even tracking of space vehicles.

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The complete system includes camera, film magazines, Autex® automatic exposure control, a 28 mm. f/3.5 wide angle lens and control box.

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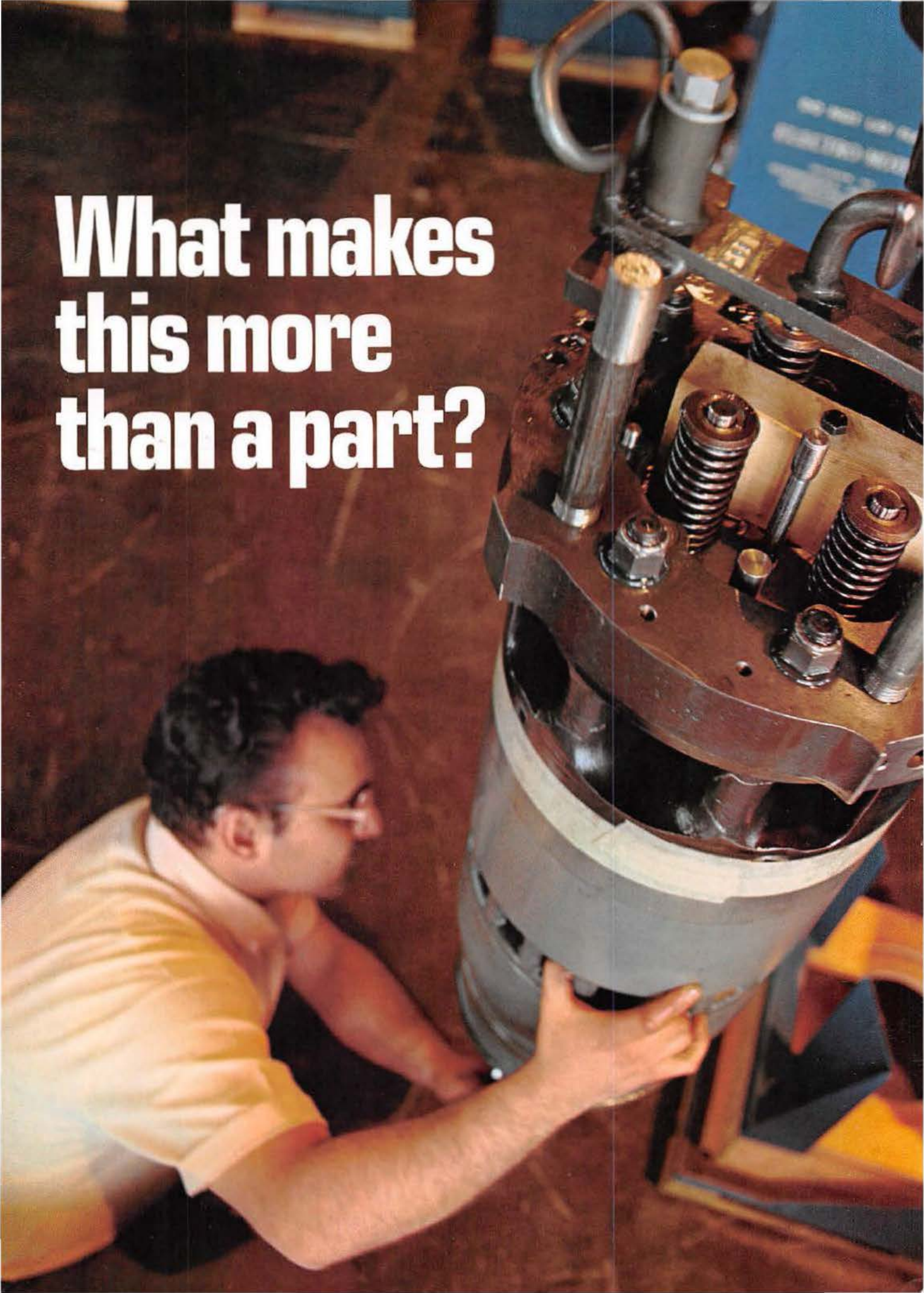
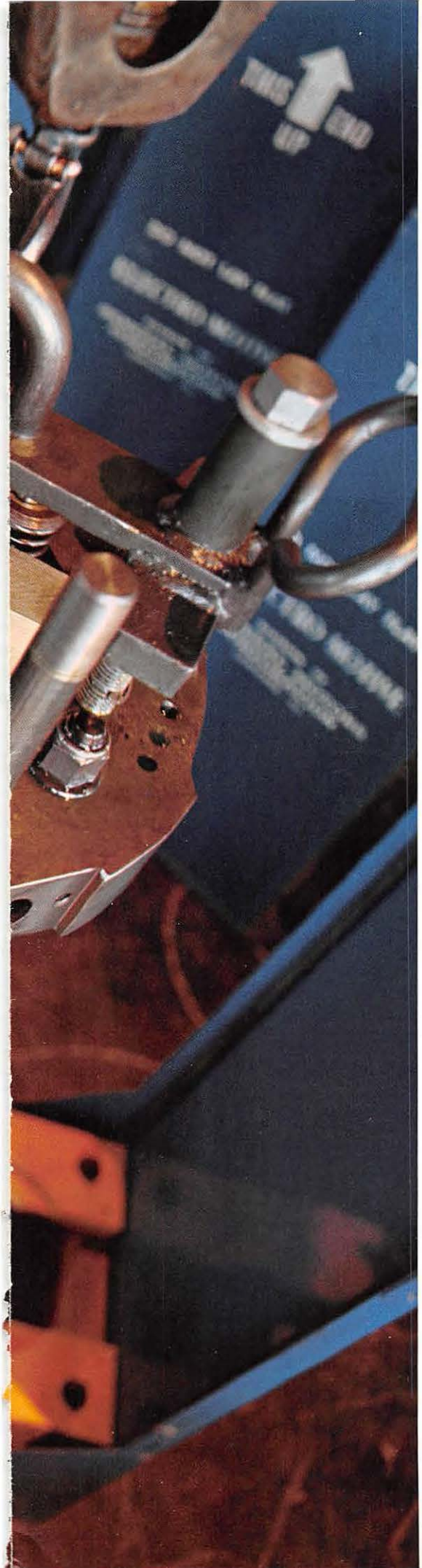

What makes
this more
than a part?



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Electro-Motive Division is acutely aware of railroad inventory problems and has invested heavily to ensure that its parts and remanufacturing services are second to none.

That's why we've set up a network of factory branches and parts warehouses at key railroad centers across the country. All of the branches and warehouses shown are backed up by the master warehouse in La Grange, Illinois, to assure fast replacement part or unit exchange service.

All points are linked by an instant-information computer system. So the outlet nearest you always has immediate access to the inventories of all other outlets. We try to make sure that you never have to wait long for anything.

Efficiently located branches and warehouses represent just one more segment of Electro-Motive's total service commitment to the railroad industry.

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Electro-Motive Division
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SUPPLY TRADE

Thomas E. Schofield
Brenco

Thomas C. Barton
GSI

Thomas E. Schofield has been appointed district sales manager, Railroad Division, **Brenco, Incorporated,** Petersburg, Va. Mr. Schofield was formerly manager of sales, **Unit Rail Anchor Co.**

Thomas C. Barton, Jr., vice president, industrial sales, Castings Division, **General Steel Industries, Inc.,** appointed Vice President of sales, Granite City plant, Ill. In addition to his previous responsibility for industrial sales, Mr. Barton will assume direction of railway product sales and the division's international operations.

Gerald R. Gonyer, field sales manager, **Farrel Co.,** Division of USM Corp., Ansonia, Conn., has been appointed vice president of sales, Rochester, N.Y. Mr. Gonyer's previous responsibilities will be assumed by **Harlan J. Hauser,** vice president—sales, in addition to his other duties.

Raymond J. O'Laughlin has been elected president, **Jackson Vibrators, Inc.,** Chicago.

Kenneth R. Manson has been appointed manager, customer services, Transportation Group, **MLW Industries,** Montreal. **Robert F. Stapells** has been appointed director, product support there.

Frank J. Cullen, formerly associated with **Cullen-Friestedt Co.** and their successors **Western-Cullen Division, Federal Sign & Signal Corp.,** has announced his association with **American Equipment Co.,** international distributors, railroad steel mill and industrial equipment, Suite 1242, 228 North LaSalle Street, Chicago, Ill. 60601.

Ivan E. Rice, district sales representative, **Electro-Motive Division** of **General Motors,** San Francisco, has been promoted to regional parts and rebuild manager, Western Region. **Gerald H. Whiteman,** district sales representative, San Francisco, has been advanced to district manager there.

Edmund R. Poole has been appointed manager, marketing communications, **Computer Identics Corp.,** Westwood, Mass.

Daryl M. Stack, sales representative, New York district sales office, Shippers Car Line division, **ACF Industries,** has been named manager of the new district sales office in Pittsburgh.

R. G. Mays has been named vice president of operation and sales, **Teledyne Metal Finishers,** Kansas City, Kan., **M. F. Sullivan** has been appointed manager of railway sales and service.

Warren R. Tamms has been named supervisor of service, Railway Equipment Division, **Nordberg Manufacturing Co.,** division of Rex Chainbelt Inc., Milwaukee, Wis.

Paul E. Granquist has been appointed vice president—hopper car and tank car leasing, **Zip Transportation Co.,** Houston, Tex.

John H. House has been appointed marketing services manager, Heavy Equipment Division, **R. G. LeTourneau, Inc.,** Longview, Tex.

Precision Engineering Co. has changed its name to **Precision National Corp.,** Mt. Vernon, Ill. The company reconditions railroad and marine diesel engines, locomotives and diesel parts.

James Anderson has been appointed general marketing manager, **ACI Systems Corp.** He was formerly manager of transportation control systems, **Computer**

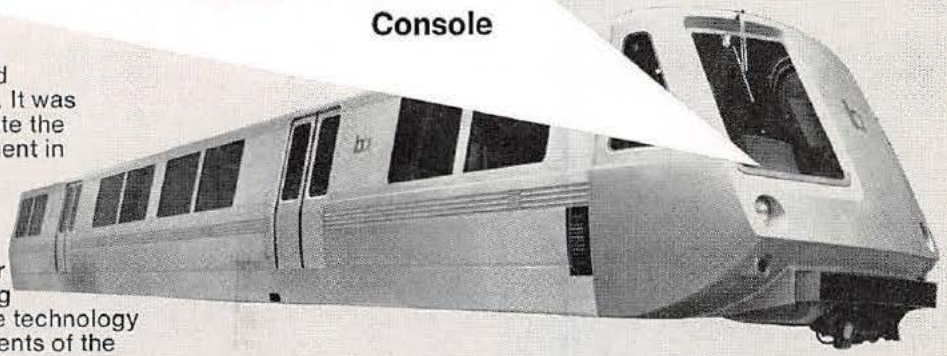
(Continued on page 59)

BART...
...ANELLUX IS AT THE CONTROLS!

Anellux Systems' Mobil-Communication Division's Command, Control and Communications Equipment is being used exclusively throughout the San Francisco Bay Area Transportation system. It combines the latest development in rapid transit technology with the newest jet-age electronics.

BART Attendant's Control Console

The BART Cars, built by Rohr Corporation, are the most advanced rapid transit cars in the world. It was essential they incorporate the latest electronic equipment in their design. Even now, our engineering team at Mobil-Communication is busy developing other new methods of applying sophisticated aerospace technology to more and more segments of the transportation industry.



ANELLUX SYSTEMS CORPORATION

Mobil-Communication Division / 2930 College Avenue / Costa Mesa, California 92626 / (714) 540-5704

Circle 15 on coupon page 39

NEW ORDERS FOR MACHINE TOOLS*

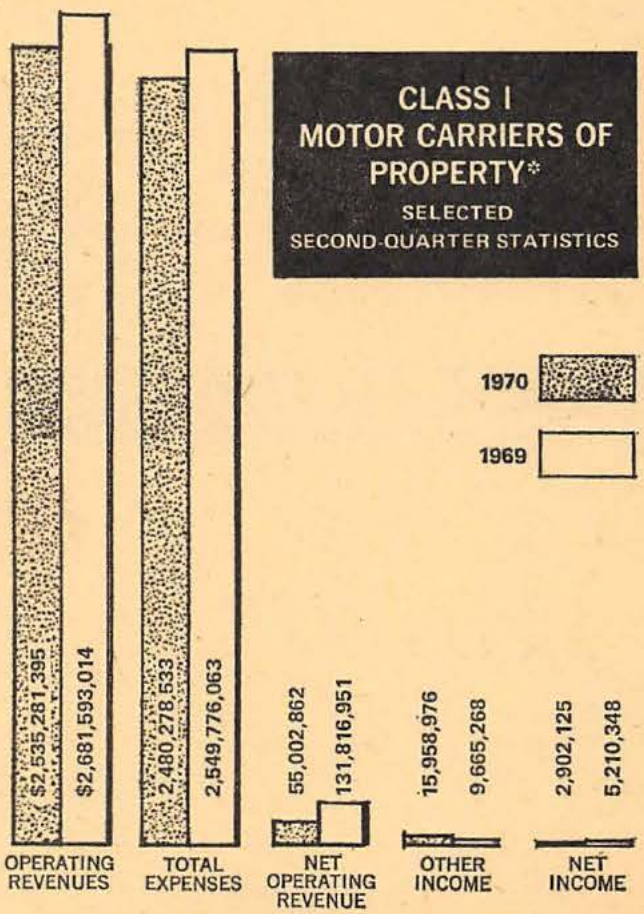
	March 1971 ($000)	March 1970 ($000)	3 mos. 1971 ($000)	3 mos. 1970 ($000)
Metal cutting tools	42,500	75,950	118,250	231,050
Metal forming tools	20,550	20,350	58,100	74,350

MACHINE TOOL SHIPMENTS*

	March 1971 ($000)	March 1970 ($000)	3 mos. 1971 ($000)	3 mos. 1970 ($000)
Metal cutting tools	64,000	98,200	181,050	279,400
Metal forming tools	28,900	40,950	91,550	121,250

**Including foreign and domestic.*
Source: National Machine Tool Builders' Association.

CLASS I MOTOR CARRIERS OF PROPERTY*
SELECTED SECOND-QUARTER STATISTICS



** Carriers with operating revenues of $1,000,000 or more.*
Source: Bureau of Accounts, ICC. Based on reports of 1,375 intercity carriers.

additional hotbox detectors, equipped with wayside display boards, in mainline territory between Birmingham and Montgomery, between Mobile and New Orleans and in the Evansville-Nashville-Memphis region. In addition, directors authorized construction of new track facilities to serve industrial plants at Copperhill, Tenn., and Oneonta, Ala.

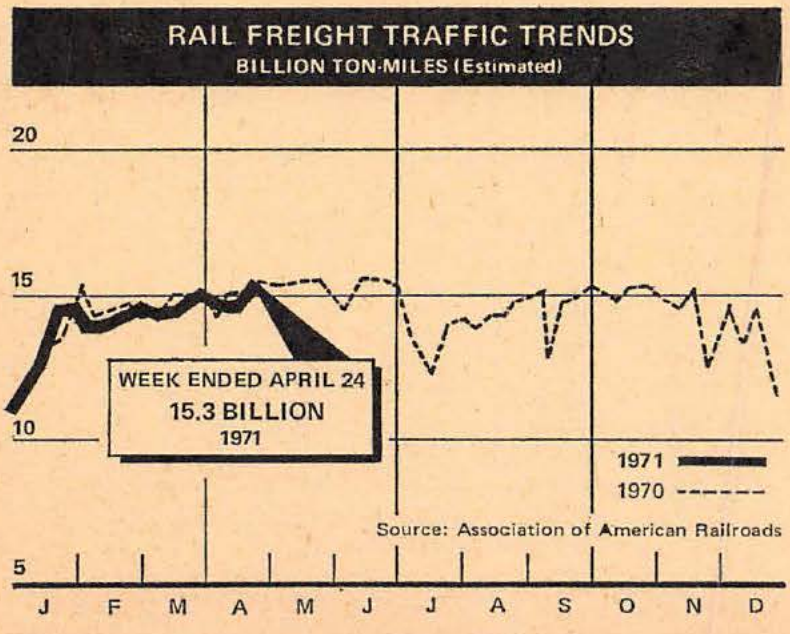
● *Santa Fe*—Ordered one Wheel Thermo-Scanner Unit from General Railway Signal for installation in the San Bernardino, Calif., area.

LOCOMOTIVES

● *Locomotive ownership and condition.*—Class I roads owned or leased 26,754 diesel-electric units on Jan. 1, an increase of 5 units over Jan. 1, 1970, according to AAR yearly summary.

	Owned or Leased Jan. 1		Stored Serviceable Jan. 1		Waiting Shops Jan. 1	
	1971	1970	1971	1970	1971	1970
Diesel-electric (units) .	26,754	26,749	237	126	1,133	1,387
Steam (locomotives) ..	1	1	1	1	0	0
Electric (units)	270	276	0	0	21	37
Gas-Turbine	0	13	0	10	0	3

● *944 new diesel-electric units installed in 1970.*—Class I roads installed 944 new, 131 rebuilt, and 511 otherwise-acquired diesel-electric units in 1970, according to the AAR yearly summary. In 1969 they installed 1,117 new, 146 rebuilt, and 386 otherwise acquired diesel-electric units. Locomotive units on order Jan. 1, 1971 totaled 660 diesel-electrics, including 27 to be rebuilt. On Jan. 1, 1970, Class I roads had 765 diesel-electric units on order, including 6 to be rebuilt.



Market Outlook

CARLOADINGS

Loadings of revenue freight in the week ended April 24 totaled 534,740 cars, according to the Association of American Railroads. This was an increase of 23,736 cars, or 4.6%, compared with the previous week, and a decrease of 20,380 cars, or 3.7%, compared with the corresponding week last year. Ton-miles generated by carloadings in the week ended April 24 are estimated at 15.3 billion, a decrease of 1.2% below the corresponding week of 1970.

REVENUE FREIGHT CARLOADINGS

Commodity	Apr. 24 week	Apr. 17 week
Grain	21,289	21,798
Farm products	10,644	10,454
Metallic ores	36,071	29,902
Coal	106,989	107,405
Crushed stone, gravel & sand	29,621	27,181
Nonmetallic minerals	9,332	9,511
Grain mill products	18,259	17,212
Food & kindred products	24,530	23,549
Primary forest products	24,385	24,728
Lumber & wood products (except furniture)	15,417	15,366
Pulp, paper & allied products	23,468	22,390
Chemicals & allied products	34,747	34,129
Petroleum products	9,558	9,419
Stone, clay & glass products	20,643	19,837
Coke	9,298	8,663
Metals & products	28,352	26,414
Motor vehicles & equipment	24,581	20,505
Waste & scrap materials	16,003	15,254
Forwarder & shipper assn. traffic	5,839	5,014
All other carloads	65,133	61,682
LCL traffic	581	621
Total cars loaded	534,740	511,034

CUMULATIVE TOTAL,	1971	1970	1969
17 weeks	8,375,659	8,577,261	8,736,282
Estimated revenue ton-miles (billions) 17 weeks	242.4	245.3	243.0

PIGGYBACK CARLOADINGS

U.S. piggyback loadings for the week ended April 17 totaled 21,999 cars (7.3% above the corresponding week last year) and 35,728 trailers or containers (up 10.9% from 1970). Cumulative volume for the first 16 weeks of 1971 is 361,375 cars (off 5.5% from last year) and 580,465 trailers or containers (down 5.4% from 1970). In addition to freight, 3,070 cars carrying 4,669 trailers or containers of mail and express traffic were handled piggyback. Cumulative figures for the first 16 weeks of 1971 are 54,993 cars (up 4.8% from the 1970 total, and 80,396 trailers or containers (down 4.7% from 1970).

IN CANADA

7 days ending	Revenue Cars Loaded	Cumulative Totals
April 7, 1971	2,734,144	47,357,422
April 7 1970	3,549,901	48,671,080

FREIGHT-TRAIN CARS

● *Louisville & Nashville.*—Directors authorized construction of 75 steel, radio-equipped cabooses at South Louisville company shops. Deliveries will begin in July.

● *March bad order ratio 0.1% higher than last year.*—Class I roads on March 1, 1971, owned 1,430,645 freight cars, 4,798 fewer than on March 1, 1970, according to AAR report summarized below. Bad order ratio was 0.1% higher than on March 1, 1970.

	March 1, 1971	March 1, 1970	Change
Car ownership	1,430,645	1,435,443	−4,798
Waiting repair	80,881	81,005	− 124
Repair ratio	5.7%	5.6%	+0.1%

● *Orders and deliveries.*—Orders were placed for 5,304 new freight cars in March, compared with 3,042 in the preceding month and 3,080 in March 1970. New cars on order and undelivered on April 1 totaled 25,193, compared with 25,015 on March 1, and 36,426 on April 1, 1970.

FREIGHT TRAIN CARS ORDERED AND DELIVERED AND BACKLOG OF ORDERS

DELIVERED

	March 1971	Feb. 1971	March 1970
Built new by car builders	4,262	4,059	5,386
Built new in R. R. shops	764	570	1,246
Built new—total	5,026	4,629	6,632
Rebuilt	308	318	428
TOTAL DELIVERED	**5,334**	**4,947**	**7,060**

ORDERED

To be built new by car builders	3,885	2,792	1,948
To be built new in R. R. shops	1,419	250	1,132
To be built new—total	5,304	3,042	3,080
To be rebuilt	260	500	113
TOTAL ORDERED	**5,564**	**3,542**	**3,193**

ON ORDER AND UNDELIVERED

	Apr. 1, 1971	Mar. 1, 1971	Apr. 1, 1970
To be built new by car builders	19,948	20,425	26,595
To be built new in R. R. shops	5,245	4,590	9,831
To be built new—total	25,193	25,015	36,426
To be rebuilt	2,145	2,193	5,130
TOTAL ON ORDER	**27,338**	**27,208**	**41,556**

NEW FACILITIES

● *Erie Lackawanna.*—Ordered four Wheel Thermo-Scanner Units from General Railway Signal for installation near Hornell, N. Y.

● *Louisville & Nashville.*—Directors authorized installation of

Viewpoint

ACI: Worth waiting for

Saturday, May 1, was the deadline for not one but two important events affecting railroads. Amtrak's take-over of intercity rail passenger service was the event that received most of the publicity. But the Amtrak deadline may not really be the most important one that came due. Also, on Saturday, May 1, railroads once again came up against an ACI labeling deadline—the fifth since the AAR gave approval three-and-one-half years ago to the KarTrak system.

That it has taken five tries to get not quite all (about 90%) of the interchange car fleet labeled hardly speaks well of railroad resolve. But by the looks of things this fifth deadline is to be the final one. Now perhaps the industry can put forth the proper amount of effort that will, in fact, put ACI to work for them. There are, of course, those who feel that ACI will never live up to its advance billing as a system which can improve equipment utilization to the point that it will in effect add 100,000 cars to the fleet. On the other hand, there are those who feel that a combination of a fully-labeled fleet and a tight scanner network still has the potential of returning substantial gains in utilization of not only equipment but manpower as well. So long as freight cars continue to move only 54 miles a day on the average, there should be no let-up in setting up any kind of system which can boost this shockingly low average.

A continent-wide ACI system can do a lot more than merely prevent cars and their cargoes from getting "lost." It can aid billing procedures and maintenance scheduling, and cut communications costs, to name just a few of the possible benefits. With a basic system in, thoughts could be turned to secondary systems which could, among other things, assist in locomotive monitoring and train identity/priority, and maybe show the physical characteristics of the equipment being scanned. Actually, there are dozens of ways that ACI could become a time- and energy-saver for railroads—and shippers.

BEATING THE TERMINAL BOTTLENECKS

The place where ACI can make its biggest impact is in the terminal district. Close to two years ago, the General Managers Association in Chicago assigned a task force to the job of finding ways in which ACI could help solve some of the bottleneck problems in the huge Chicago terminal district. There is a good chance that GMA will be making a decision soon on an ACI scanner-sharing program which could become a model for other terminals across the country. A positive decision here could be the shot in the arm which ACI needs to get moving at a faster pace, and on a nationwide scale.

The time surely has arrived to give ACI a fair shake. There is no denying that underestimation of the scope of the labeling task has made some enemies for ACI. And, bugs in equipment used in early test projects created some skeptics whose minds will be tough to change. But, a system with the potential of ACI shouldn't be written off as a failure, without first giving it an honest chance to work. It shapes up as a good system for increasing productivity on the railroads. And there is no more critical time than now for such a boost in productivity.

(Continued from page 54)

Identics Corp.

The Transportation and Industrial Division of **GTE Information System Incorporated** has changed its name from Commercial Electrics Division. The division has combined all of its facilities at 205 Burlington Road, Bedford, Mass.

Dr. W. E. Johnson has been appointed vice president and general manager, transportation division, **Westinghouse Electric Corp.**, Forest Hills, a Pittsburgh suburb. Dr. Johnson previously was vice president and general manager, Westinghouse Astronuclear/underseas divisions, Baltimore.

Curtis C. Tatham, sales representative, **Pullman-Standard Division** of **Pullman Incorporated,** has been appointed assistant vice president, sales, Chicago. **William G. Sears** has been named assistant vice president, sales in charge of P-S's new northwest regional sales office, St. Paul.

Charles G. Campbell has been named assistant to the president, **CF&I Steel Corp.** Mr. Campbell was formerly vice president and general manager, **Colorado & Wyoming.**

Dearborn Chemical Division, W. R. Grace & Co. has named the following district managers: **Dennis D. Schmid,** Detroit; **Thomas J. Kelly,** Cleveland; **Carl J. Thorpe,** Atlanta; **Eugene G. Mulloy,** Nashville; **Howard F. Dorrington,** Des Moines; **Fred E. Bennett,** Cincinnati; **Albert T. Fojtik,** Houston; **Garnet H. Ward,** Chicago.

Sheldon Kaplan, vice chairman, **Evans Products Co.,** has been elected president and chief operating officer. **Monford A. Orloff,** chairman, president and chief executive officer, will continue as chairman and chief executive officer. **Dr. Piotr Zenczak** and **William C. Finkenstaedt** have been named executive vice presidents.

Franklin D. Barber, Sr., president and chairman of the board, **Standard Car Truck Co.,** Chicago, has retired. **R.W. Burns,** vice president—sales, has been elected president. Other officers are **R. S. Russell** and **J.C. Barber,** vice presidents; and **W.C. MacDonald,** secretary-treasurer.

TRANSIT

Thompson A. Nooner has been appointed manager of marketing, **Cleveland Transit System.** Mr. Nooner, who will head the transit industry's first marketing department, was formerly general manager, Genecast Division, **General Signal Corp.,** Rochester, N.Y. **Salvatore R. Felice** has been appointed superintendent of purchasing for CTS. Mr. Felice was formerly employed in CTS's Schedule, Accident, and Research & Planning Departments.

David V. Lacey has been appointed to the **Toronto Transit Commission,** to succeed former Commissioner **James T. Fisher.** Mr. Lacey was chairman, Metropolitan Toronto Transportation Committee in 1970 and simultaneously was Metro Council's liaison officer to the Toronto Transit Commission.

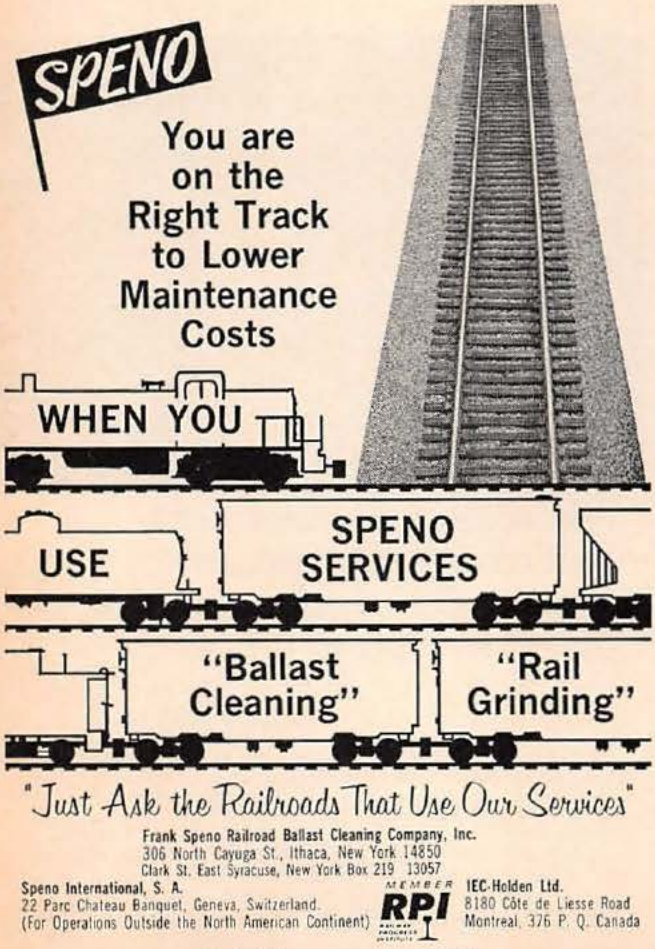
A. Earl Wood, commissioner of transportation, **State of Connecticut,** elected chairman for the coming of the **Tri-State Transportation Commission,** to succeed **John C. Kohl,** New Jersey's transportation commissioner.

James H. Graebner has been appointed transportation engineer for **Regional Transportation District,** Denver, Colo. Mr. Graebner was project director for **W. C. Gilman & Co.,** on the transit study for Denver conducted in 1970.

Robert F. Seedlock, chief engineer—capital improvements, **Port Authority of Allegheny County,** Pittsburgh, has been named project manager of the Port Authority's Early Action Program for rapid transit.

Michael Cafferty resigned as **DOT** deputy assistant secretary for Environment & Urban Systems, after having been nominated to fill the unexpired term of the late **George L. DeMent** on the **Chicago Transit Authority.**

James E. Wiesenhuegel has been named transportation planning director, **Mobility Systems Co.,** Houston, Tex. Mr. Wiesenhuegel was formerly with **W.C. Gilman & Co.,** Cleveland, where he served as project director on numerous transit studies.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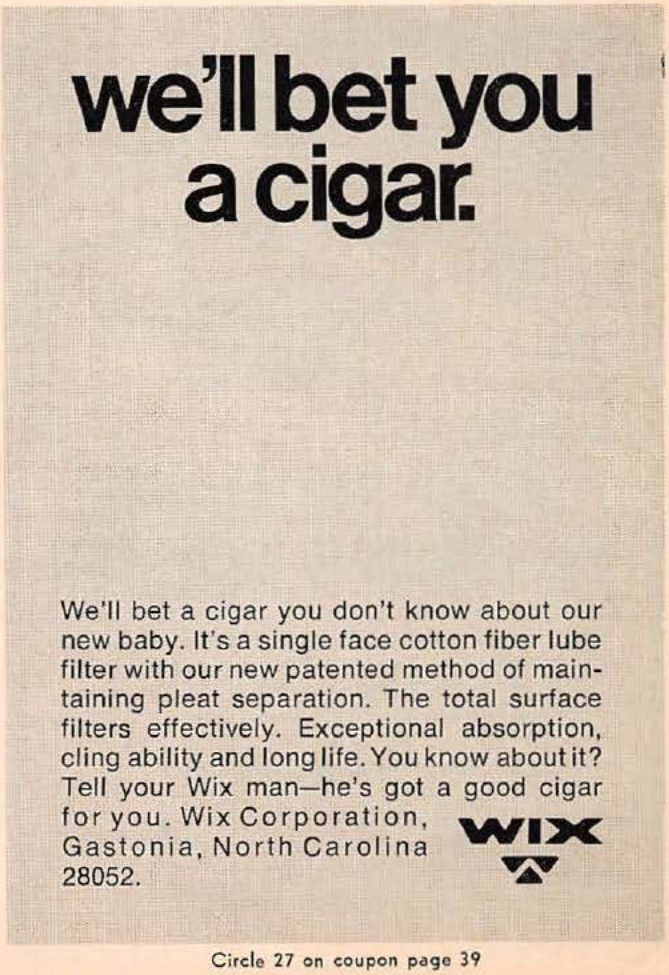
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Circle 27 on coupon page 39

Special tie plates reduce rail shelling

(Continued from page 36)
der the tie plates would reduce the effective depth of the spikes in the ties.

● **First test in 1969.** Test installations of Hi-Cant tie plates were first made on UP in October 1969. At that time they were installed under the high rails of two curves on the California division about 20 miles west of Las Vegas, Nev. The two curves, separated by a length of tangent track, consisted of a curve of 6 degrees, 16 minutes and one of 3 degrees, 50 minutes. This is a single-track CTC main line which carries 23 million tons of traffic annually. Speeds over the curves are 40 mph for passenger trains and 30 mph for freight trains.

In spite of the fact that these curves had previously been laid with heat-treated rail in 1955, a heavy incidence of shelly rail had developed on them. The Hi-Cant tie plates were installed in conjunction with a regular rail-laying program involving laying new 133-pound rail (which is standard for main-line use on UP). To date no sign of shelly rail has developed on the curves.

The next test installation of Hi-Cant tie plates was made starting in August 1970, when they were installed at selected locations in territories carrying from 20 million to 44 million tons of traffic annually. These installations were made on 26 curves ranging from 2 degrees to 9 degrees, 14 minutes. As in the earlier test installations, the Hi-Cant tie plates were placed in conjunction with regular rail-laying work on the high sides of the curves including the spirals.

● **Standardization decided.** As with the previous test installations, early indications from these 26 test locations indicated that the Hi-Cant tie plates were effective in relieving the gauge corners of the rails of any sign of stress, or even of wear of any kind. On the basis of these and earlier tests, the decision was made in November 1970 to standardize on Hi-Cant tie plates. Further installations were made late in that year in conjunction with the road's regular rail-laying program.

Are any special provisions or precautions required when installing the Hi-Cant tie plates? "Only two," answers Maxwell, "and those are to be sure the tie-plate bearing surfaces are adzed level and to make sure the track is properly gauged to reduce heavy flange wear caused by longer-wheel-base cars."

● **Hi-Si rail also used.** Some time ago, in an effort to reduce rail wear and shelling on curves, UP began the practice of installing flame-hardened rail on both sides of curves of 1 degree up to 4 degrees. On curves in excess of 4 degrees, the practice was established of installing Hi-Si rail on both sides. This rail, also produced by CF&I Steel Corp., contains a higher-than-usual amount of silicon to increase its resistance to wear. The use of Hi-Si rail on curves in excess of 4 degrees is being continued, along with use of Hi-Cant tie plates on the high sides of those curves.

Present thinking on UP, says Maxwell, is that use of Hi-Cant tie plates in combination with Hi-Si rail will reduce shelling and extend rail life.

● **Test on tangent track.** The road is also now interested in determining whether the special tie plates will be effective in reducing the incidence of shelly rail in tangent track. To this end, a test installation of the Hi-Cant tie plates was made last fall on two stretches of tangent track with a two-degree curve between them in single-track territory carrying 24 million tons of traffic per year. This installation, 0.32 mile long on the Oregon division about 47 miles east of Portland, is in a territory where heavy shelling has been experienced on tangent track. To date, there has been no evidence of shelling in the test section. ■

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JOHN LEVETT'S WORLD IN TRANSIT:

BARCELONA: The Metro company is spending 800 million pesetas this year, mostly for new lines.

BERLIN: An extension of the U-Bahn was opened earlier this year. Cost of the new extension—including electrical installations, signaling equipment and rectifiers—was DM 335 million. Purchases last year included 88 coaches. Current orders, some orders will extend to 1972, are for 172 coaches. Future development will include introduction of a radio communications system and TV dispatching/clearance system in all trains; introduction of automatic train control and line and long-distance signal installations.

BUENOS AIRES: Two Metro lines are to be extended and a new line is to be built. One extension will go northwest to Villa Urquiza, the other to the northern district of Saavedra. The new line, which is now under study, will go from Avellaneda City beneath the Riachuella River to the center of Buenos Aires.

CARACAS: The national government has approved credits for construction of the first section and eight stations of the Caracas subway. Construction is likely to begin in July and should be completed by 1974. Rolling stock, rails and electrical equipment are to be imported.

HELSINKI: Work has begun on the test track for the new Metro. Bids for tunnel construction will be called by the end of 1971 so that work can start by 1972.

LONDON: London Transport is seeking $1.25 billion from government and city authorities for expansion and modernization of the city's underground system during the next 20 years. First priority will go to construction of a 4-mile link between the existing Piccadilly line and Heathrow Airport. This line is to be completed by 1975. Says R. M. Robbins, member of the London Transport Executive with over-all responsibility for operation of railways: "This line will be a tremendous asset for airline passengers and for the 60,000 staff commuting daily to the airport. And it will provide a new facility for some commuters into central London." Trains will serve Heathrow every four minutes at weekend peak periods, every five minutes at Monday-through-Friday peaks, and every seven and one half minutes at other times. They will run through the heart of central London, providing direct links with the capital's main hotel areas. Construction has been scheduled to begin later this year.

MADRID: The Metro is expected to order rolling stock for new lines under construction and to replace old stock. By 1980 total length of the Madrid Metro lines should reach more than 56 miles.

MUNICH: Opening of Munich's first U-Bahn segment, a seven-mile north-south line serving 13 stations between Freimann and Goetheplatz, is now set for October 1971. A 2.5-mile line branching off to the site of the 1972 summer Olympics is planned. By 1990, under Munich's master plan, the U-Bahn will have 25 miles of underground and 37 miles of surface lines in operation. The U-Bahn has been testing prototype trainsets since 1967. A total of 54 sets will be delivered by May 1972.

PARIS: The first of the French capital's regional express railways—a 30-mile line running east-west from Boissy-St. Leger to St. Germainen-Laye —will be in full operation by 1975. If successful it could lead to construction of an additional 150 miles of express railways within the metropolitan area. The city's transit authority, Regie Autonome des Transports Parisiens (RATP) warns that the alternative is "overwhelming surface traffic congestion." The first of the regional express lines uses existing commuter tracks of the French National Railways (SNCF). They are connected by two deep-level tunnels running beneath the RATP Metro's present east-west line.

SEOUL: South Korea is to ask Japan for a loan of $85 million (including $35 million in private loans) to help finance construction of Seoul's projected subway. If granted, the loans would guarantee that construction contracts go to Japan. Total cost is expected to reach $135 million.

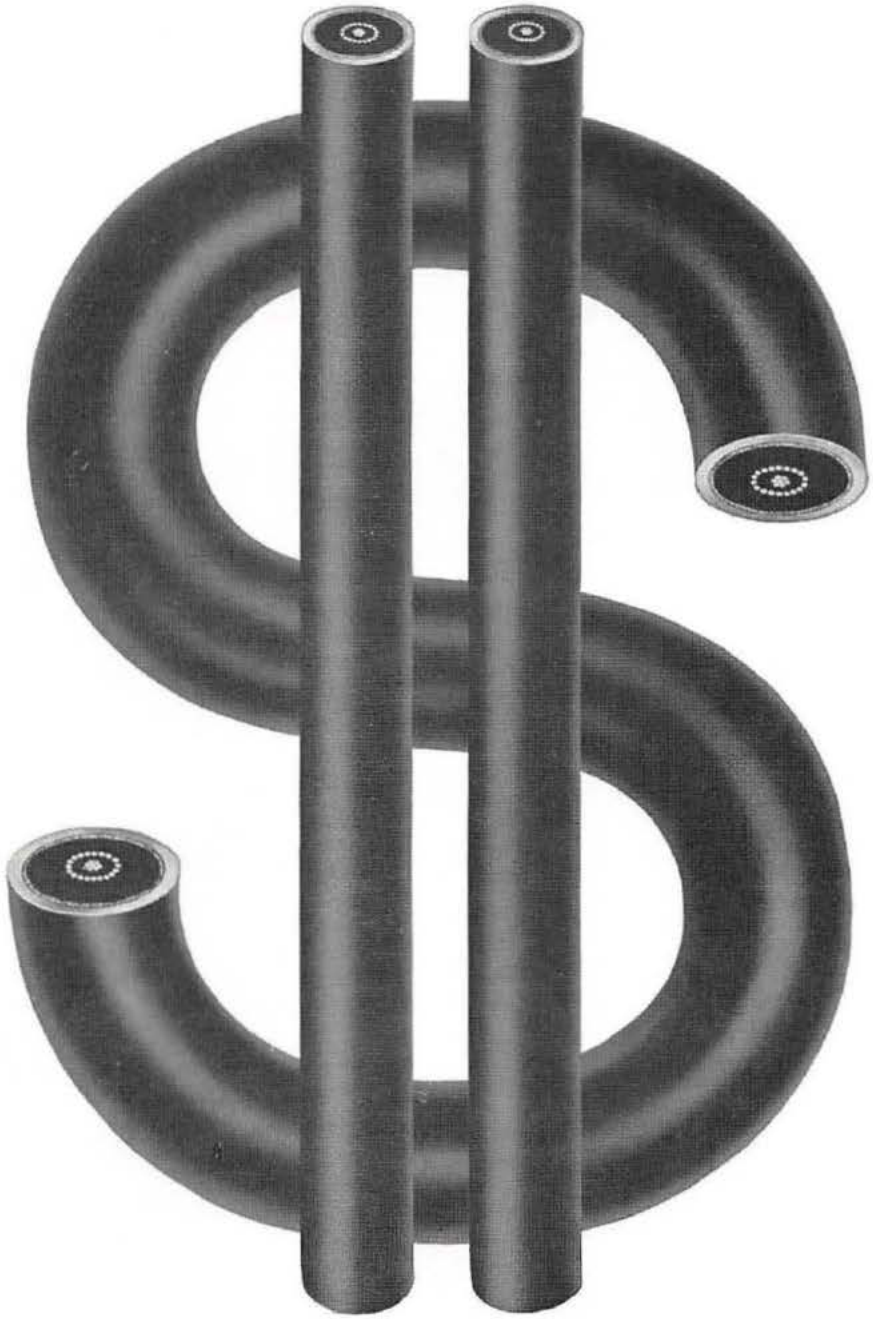
STOCKHOLM: About 800,000 passengers will be carried daily on the underground by 1990, double the present total.

TEHERAN: Much interest is being shown in proposals to construct a rapid transit system to alleviate congestion and pollution in the metropolitan area. Also under study is a project for a monorail system.

TEL AVIV: The Israeli Government has agreed "in principle" to construct a 35-mile transit line, seven miles of which would be underground. Preliminary studies now under way will be completed within six months. An expressway now being built around the city has a median strip set aside for rapid transit.

WARSAW: A 15-mile Metro line, linked with existing rail commuter lines, will be completed by 1985, says Jerzy Brzostek, director of the Warsaw City Council. By that time, says Brzostek, Warsaw's population will have soared to 1,550,000. Studies for a Warsaw Metro date back to 1927. Construction actually began in 1950, but was discontinued in 1957. A tunnel of several hundred metres remains from that abortive effort.

ZURICH: The city council has agreed to a loan for construction of a Metro. The project is under study. First construction would be a cross-city line with two branches. Track will be standard gauge. The system would operate with two-car sets capable of coupling to a maximum six-car train. Maximum number of passengers per six-car train would be 1,302 (360 seated). All provisions have been made for fully automatic operation.



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An embargo was placed on other than first class mail traveling more than 300 miles.

Major utilities planned drastic cutbacks in power to homes and industry, and the auto companies prepared for a complete shutdown in 5 days.

The Office of Emergency Preparedness published a list of priority shipments such as food, medical supplies, fuel for heating and generating electric power, mail, and chemicals for purifying water and processing sewage.

On December 11, the railroads were running again, and the country returned to normal.

In 24 hours, the nation had witnessed what would happen to the entire country without its railroad system.

But the nation's railroad system still faces an imminent crisis—not of a temporary stoppage—but of total survival.

If we have not listened before, the 24 hours of December 10 should make us listen now.

And if there were any doubt as to the seriousness of the crisis, the critical problems faced by a major railroad recently should make us investigate and act immediately.

Is the railroad crisis real?

In 1969, one third of the nation's railroads operated at a loss. The results for 1970 are expected to be even poorer. And the immediate future is critical, unless action is taken now.

The reasons for the crisis are historical. The railroads are forced to operate under strangling, century-old laws that many respected government officials have called outdated and no longer justified. There is no freedom to eliminate deficit services, nor freedom to realistically compete for new business.

While staggering under discriminatory taxes, the railroads are not permitted to participate equally in government transportation programs.

The crisis is real.

It is a crisis not just for the railroads, but for every single American industry, employee and consumer. Its immediate solution, therefore, is the moral obligation of our elected government officials.

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